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COMMITTEE OF EXPERTS ON THE TRANSPORT
OF DANGEROUS GOODS

REPORT OF THE COMMITTEE OF EXPERTS ON ITS TWENTY FIRST SESSION

(Geneva, 4-13 December 2000)

Addendum 1

Annex 2

Amendments to the Recommendations on the Transport of Dangerous Goods (Model Regulations)

This annex contains amendments to the Model Regulations on the Transport of Dangerous Goods (as annexed to the Recommendations on the Transport of Dangerous Goods, eleventh revised edition, ST/SG/AC.10/1/Rev.11) adopted by the Committee at its twenty-first session.

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AMENDMENTS TO THE MODEL REGULATIONS ANNEXED TO THE ELEVENTH REVISED EDITION OF THE UNITED NATIONS RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS
(Refer to ST/SG/AC.10/1/Rev.11)

Replace the word "carriage" with "transport" throughout the Recommendations and the Model Regulations on the Transport of Dangerous Goods.

TABLE OF CONTENTS

Amend the table of contents to reflect the amendments to the various parts of the Model Regulations as appropriate.

PART 1

Chapter 1.1

1.1.2.3.1 Doesn't apply to the English version.

Chapter 1.2

1.2.1 Amend as follows:

- Add the following definitions:

"Aerosols or aerosol dispensers are non-refillable receptacles meeting the requirements of 6.2.2, made of metal, glass or plastics and containing a gas, compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state;

Alternative arrangement means an approval granted by the competent authority for a portable tank or MEGC that has been designed, constructed or tested to technical requirements or testing methods other than those specified in these Model Regulations (see, for instance, 6.7.5.11.1);

Bundles of cylinders are assemblies of cylinders that are fastened together and which are interconnected by a manifold and transported as a unit. The total water capacity shall not exceed 3000 litres except that bundles intended for the transport of gases of Division 2.3 shall be limited to 1000 litres water capacity;

Critical temperature is the temperature above which the substance cannot exist in the liquid state;

Cryogenic receptacles are transportable thermally insulated receptacles for refrigerated liquefied gases, of a water capacity of not more than 1000 litres;

Cylinders are transportable pressure receptacles of a water capacity not exceeding 150 litres;

Filling ratio is the ratio of the mass of gas to the mass of water at 15 °C that would fill completely a pressure receptacle fitted ready for use;

Inspection body is an independent inspection and testing body approved by the competent authority;

Multiple-element gas containers (MEGCs) are multimodal assemblies of cylinders, tubes and bundles of cylinders which are interconnected by a manifold and which are assembled within a framework. The MEGC includes service equipment and structural equipment necessary for the transport of gases;

Pressure drums are welded transportable pressure receptacles of a water capacity exceeding 150 litres and of not more than 1000 litres, (e.g. cylindrical receptacles equipped with rolling hoops, spheres on skids);

Pressure receptacles is a collective term that includes cylinders, tubes, pressure drums, closed cryogenic receptacles and bundles of cylinders;

Settled pressure is the pressure of the contents of a pressure receptacle in thermal and diffusive equilibrium;

Test pressure is the required pressure applied during a pressure test for qualification or requalification;

Tubes are seamless transportable pressure receptacles of a water capacity exceeding 150 litres and of not more than 3000 litres;

Working pressure is the settled pressure of a compressed gas at a reference temperature of 15 °C in a full pressure receptacle;".

- Incorporate all the IBC definitions under "IBC" in the alphabetical list as follows:

"*Remanufactured IBCs* are metal, rigid plastics or composite IBCs that:

(a) are produced as a UN type from a non-UN type; or

(b) are converted from one UN design type to another UN design type.

Remanufactured IBCs are subject to the same requirements of these Regulations that apply to new IBCs of the same type (see also design type definition in 6.5.4.1.1).

Repaired IBCs are metal, rigid plastics or composite IBCs that, as a result of impact or for any other cause (e.g. corrosion, embrittlement or other evidence of reduced strength as compared to the design type) are restored so as to conform to the design type and to be able to withstand the design type tests. For the purposes of these Regulations, the replacement of the rigid inner receptacle of a composite IBC with a receptacle conforming to the original manufacturer's specification is considered repair. However, routine maintenance of IBCs (see definition below) is not considered repair. The bodies of rigid plastics IBCs and the inner receptacles of composite IBCs are not repairable.

Routine maintenance of IBCs is the routine performance on metal, rigid plastics or composite IBCs of operations such as:

(a) Cleaning;

(b) Removal and reinstallation or replacement of body closures (including associated gaskets), or of service equipment, conforming to the original manufacturer's specifications, provided that the leaktightness of the IBC is verified; or

(c) Restoration of structural equipment not directly performing a dangerous goods containment or discharge pressure retention function so as to conform to the design type (e.g. the straightening of legs or lifting attachments) provided that the containment function of the IBC is not affected."

Introduce entries for *"Remanufactured IBCs", "Repaired IBCs" and "Routine maintenance of IBCs"* in alphabetical order with the following reference: "(see *"Intermediate Bulk Containers (IBCs)"*)".

- Amend the definitions of "Passenger aircraft", "Liquids" and "Salvage packagings" to read as follows:

"*Passenger aircraft* means an aircraft that carries any person other than a crew member, a carrier's employee in an official capacity, an authorized representative of an appropriate national authority, or a person accompanying a consignment or other cargo;"

"*Liquids* are dangerous goods which at 50 °C have a vapour pressure of not more than 300 kPa (3 bar), which are not completely gaseous at 20 °C and at a pressure of 101.3 kPa, and which have a melting point or initial melting point of 20 °C or less at a pressure of 101.3 kPa. A viscous substance for which a specific melting point cannot be determined shall be subjected to the ASTM D 4359-90 test; or to the test for determining fluidity (penetrometer test) prescribed in section 2.3.4 of Annex A of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)[1].

"*Salvage packagings* are special packagings into which damaged, defective, leaking or non-conforming dangerous goods packages, or dangerous goods that have spilled or leaked, are placed for purposes of transport for recovery or disposal;".

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[1] *United Nations publication: ECE/TRANS/140.*

PART 2

Chapter 2.0

2.0.1.3 Amend to read as follows:

"2.0.1.3 For packing purposes, substances other than those of Classes 1, 2 and 7, Divisions 5.2 and 6.2 and other than self-reactive substances of Division 4.1 are assigned to three packing groups in accordance with the degree of danger they present:

Packing group I: Substances presenting high danger;
Packing group II: Substances presenting medium danger; and
Packing group III: Substances presenting low danger.

The packing group to which a substance is assigned is indicated in the Dangerous Goods List in Chapter 3.2".

2.0.3.3 Add at the top of the table "Class or Division and Packing Group" and amend the entries for Class 3 and Division 4.3 to read as follows:

Class or Division and Packing Group	4.3
3 I*	4.3
3 II*	4.3
3 III*	4.3

2.0.4.1 In the first sentence of the third paragraph and in the first example the word "sample" shall be in upper case to read as follows:

"... shall be supplemented with the word "SAMPLE" (e.g., FLAMMABLE LIQUID, N.O.S., SAMPLE)"

Insert "proper" when missing before the words "shipping name" (twice).

Chapter 2.1

2.1.3.1.2 (d) Delete.

Chapter 2.2

2.2.1.1 Add the following Note:

"***NOTE**: Carbonated beverages are not subject to these Regulations.*".

2.2.1.2 and
2.2.1.3 Replace the existing paragraphs with the following text:

"2.2.1.2 The transport condition of a gas is described according to its physical state as:

(a) *Compressed gas:* a gas which when packaged under pressure for transport is entirely gaseous at -50 °C; this category includes all gases with a critical temperature less than or equal to -50 °C;

(b) *Liquefied gas:* a gas which when packaged under pressure for transport is partially liquid at temperatures above -50 °C. A distinction is made between:

High pressure liquefied gas: a gas with a critical temperature between -50 °C and +65 °C, and

Low pressure liquefied gas: a gas with a critical temperature above +65 °C;

(c) *Refrigerated liquefied gas:* a gas which when packaged for transport is made partially liquid because of its low temperature; or

(d) *Dissolved gas:* a gas which when packaged under pressure for transport is dissolved in a liquid phase solvent.

2.2.1.3 The class comprises compressed gases, liquefied gases, dissolved gases, refrigerated liquefied gases, mixtures of one or more gases with one or more vapours of substances of other classes, articles charged with a gas and aerosols.".

2.2.2.1 Add the following note at the end of the introductory sentence:

"***NOTE**: For UN 1950 AEROSOLS, see also the criteria in special provision 63 and for UN 2037 RECEPTACLES, SMALL, CONTAINING GAS (GAS CARTRIDGES) see also special provision 303.".*

Delete the NOTE under 2.2.2.1 (a).

Chapter 2.4

Introductory Notes: Delete Note 3.

2.4.2.3.2.3 Renumber the existing note as NOTE 1 and add a new NOTE 2 as follows:

"***NOTE 2**: The codes "OP1" to "OP8" shown in the column "Packing methods" refer to packing methods in packing instruction P520.".*

Add the following entries:

SELF-REACTIVE SUBSTANCE	Concentration (%)	Packing method	Control temperature (°C)	Emergency temperature (°C)	UN generic entry	Remarks
2-DIAZO-1-NAPHTHOL-SULPHONIC ACID ESTER MIXTURE, TYPE D	< 100%	OP7			3226	(9)
2,5-DIETHOXY-4-(4-MORPHOLINYL)-BENZENEDIAZONIUM SULPHATE	100%	OP7			3226	
4-(DIMETHYLAMINO)-BENZENEDIAZONIUM TRICHLOROZINCATE (-1)	100%	OP8			3228	
2,5-DIBUTOXY-4-(4-MORPHOLINYL)-BENZENEDIAZONIUM, TETRACHLOROZINCATE (2:1)	100%	OP8			3228	

In the list of self-reactive substances:

Under "Self-reactive substance" amend the following entries:

- For "BENZENE-1,3-DISULPHOHYDRAZIDE, as a paste" read "BENZENE-1,3-DISULPHONYL HYDRAZIDE, as a paste";
- For "BENZENE SULPHOHYDRAZIDE" read "BENZENESULPHONYL HYDRAZIDE";
- For "2-DIAZO-1-NAPHTHOL-4-SULPHOCHLORIDE" read "2-DIAZO-1-NAPHTHOL-4-SULPHONYL CHLORIDE";
- For "2-DIAZO-1-NAPHTHOL-5-SULPHOCHLORIDE" read "2-DIAZO-1-NAPHTHOL-5-SULPHONYL CHLORIDE";
- For "DIPHENYLOXIDE-4,4'-DISULPHOHYDRAZIDE" read "DIPHENYLOXIDE-4,4'-DISULPHONYL HYDRAZIDE";

At the end of the list, under "Remarks", amend the reference "7.1.4.2" in remarks (1), (4) and (6) to read: "7.1.4.3".

Add the following new remark:

"(9) This entry applies to mixtures of esters of 2-diazo-1-naphthol-4-sulphonic acid and 2-diazo-1-naphthol-5-sulphonic acid meeting the criteria of 2.4.2.3.3.2(d).".

2.4.2.4.1 Add "UN 3376" to the UN Nos. listed in 2.4.2.4.1 and amend alphabetical index accordingly.

Chapter 2.5

2.5.3.2.4 Add a new paragraph before the existing table to read:

"2.5.3.2.4 *List of currently assigned organic peroxides*

***NOTE**: The codes shown in the column "Packing methods" have the following meanings:*

(a) Codes "OP1" to "OP8" refer to packing methods in packing instruction P520;

(b) Code "N" indicates that the substance is permitted in IBCs (see IBC520 and 4.1.7.2.1);

(c) Code "M" indicates that the substance is permitted in tanks (see T23)."

In the list of Organic Peroxides, for each organic peroxide which has, in the column "Number (Generic entry)", the word "exempt", add in the last column "29)" as a reference to a new remark to be added at the end of the table which will read as follows:

"29) Not subject to the requirements of these Model Regulations for Division 5.2."

Add the following entries:

ORGANIC PEROXIDE	Conc (%)	Diluent type A (%)	Diluent type B (%) 1)	Inert Solid (%)	Water (%)	Packing Method	Control Temp (°C)	Emerg. Temp (°C)	Number (Generic entry)	Subsidiary risks and Remarks
DIISOPROPYL PEROXYDICARBONATE	≤ 28	≥ 72				OP7	- 15	- 5	3115	
PEROXYACETIC ACID, DISTILLED, TYPE F, stabilized	≤ 41					M	+ 30	+ 35	3119	13) 30)

Add a new remark at the end of the table to read as follows:

"30) Formulation derived from distillation of peroxyacetic acid originating from peroxyacetic acid in concentration of not more than 41% with water, total active oxygen (Peroxyacetic acid + H_2O_2) ≤ 9.5%, which fulfills the criteria of 2.5.3.3.2 (f).".

Chapter 2.6

2.6.3.1.3 Replace the existing 2.6.3.1.3 with the following text:

"*Diagnostic specimens* are any human or animal material, including, but not limited to, excreta, secreta, blood and its components, tissue and tissue fluids being transported for diagnostic or investigation purposes, but excluding live infected animals.

Diagnostic specimens shall be assigned to UN 3373 unless the source patient or animal has or may have a serious human or animal disease which can be readily transmitted from one individual to another, directly or indirectly, and for which effective treatment and preventive measures are not usually available, in which case they shall be assigned to UN 2814 or UN 2900.

NOTE 1: Blood which has been collected for the purpose of blood transfusion or for the preparation of blood products, and blood products and any tissues or organs intended for use in transplants are not subject to these Regulations.

NOTE 2: Assignment to UN 2814 or UN 2900 shall be based on known medical history of the patient or animal, endemic local conditions, symptoms of the patient or animal, or professional judgement concerning individual circumstances of the patient or animal."

2.6.3.3 Amend the title to read "***Biological products***".

2.6.3.3.2 and
2.6.3.3.3 Delete.

Chapter 2.7

2.7.7.2.1 In the table, for "Ytterbium (79)" read "Ytterbium (70)".

2.7.7.2.2 In the table, in the heading of the right column, change "Activity limits for an exempt consignment" to "Activity limit for an exempt consignment".

Chapter 2.8

2.8.1 At the end of the definition, delete: "; they may also cause other hazards".

2.8.2.2 Replace the reference to footnote "1/" with "(see 2.8.2.3)".

Delete footnote 1/ and renumber footnote 2/ and references thereto accordingly.

2.8.2.3 Insert the text of footnote 1 as a new 2.8.2.3 and renumber the following paragraphs accordingly.

PART 3

Chapter 3.1

3.1.2 Add the following notes under the heading "Proper shipping name":

"***NOTE 1***: *For proper shipping names to be used for dangerous goods transported as limited quantities, see 3.4.7.*

NOTE 2: *For proper shipping names used for the transport of samples, see 2.0.4.*".

3.1.2.6 and 3.1.2.7 Insert new paragraphs 3.1.2.6 and 3.1.2.7 to read as follows:

"3.1.2.6 Except for self-reactive substances and organic peroxides and unless it is already included in capital letters in the name indicated in the Dangerous Goods List, the word "STABILIZED" shall be added as part of the proper shipping name of a substance which without stabilization would be forbidden from transport in accordance with 1.1.3 due to it being liable to dangerously react under conditions normally encountered in transport (e.g.: "TOXIC LIQUID, ORGANIC, N.O.S., STABILIZED)".

When temperature control is used to stabilize such substances to prevent the development of any dangerous excess pressure, then:

(a) For liquids: where the SADT is less than 50 °C, the provisions of 7.1.4 shall apply;

(b) For gases: the conditions of transport shall be approved by the competent authority.

3.1.2.7 Hydrates may be included under the proper shipping name for the anhydrous substance."

Renumber sub-section 3.1.2.6 as 3.1.2.8 accordingly and amend it to read as follows:

"3.1.2.8 *Generic or "not otherwise specified" (N.O.S.) names*

3.1.2.8.1 Generic and "not otherwise specified" proper shipping names that are assigned to special provision 274 in Column 6 of the Dangerous Goods List shall be supplemented with their technical or chemical group names unless a national law or international convention prohibits its disclosure if it is a controlled substance. For explosives of Class 1, the dangerous goods description may be supplemented by additional descriptive text to indicate commercial or military names. Technical and chemical group names shall be entered in brackets immediately following the proper shipping name. An appropriate modifier, such as "contains" or "containing" or other qualifying words such as "mixture", "solution", etc. and the percentage of the technical constituent may also be used. For example: "UN 1993 Flammable liquid, n.o.s. (contains xylene and benzene), 3, PG II".

3.1.2.8.1.1 The technical name shall be a recognized chemical or other name currently used in scientific and technical handbooks, journals and texts. Trade names shall not be used for this purpose. In the case of pesticides, only ISO common name(s), other name(s) in the WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification, or the name(s) of the active substance(s) may be used.

3.1.2.8.1.2 When a mixture of dangerous goods is described by one of the "N.O.S." or "generic" entries to which special provision 274 has been allocated in the Dangerous Goods List, not more than the two constituents which most predominantly contribute to the hazard or hazards of a mixture need to be shown, excluding controlled substances when their disclosure is prohibited by national law or international convention. If a package containing a mixture is labelled with any subsidiary risk label, one of the two technical names shown in brackets shall be the name of the constituent which compels the use of the subsidiary risk label.

3.1.2.8.1.3 Examples illustrating the selection of the proper shipping name supplemented with the technical name of goods for such N.O.S. entries are:

UN 2003 METAL ALKYL, WATER-REACTIVE, N.O.S. (trimethylgallium)
UN 2902 PESTICIDE, LIQUID, TOXIC, N.O.S. (drazoxolon).".

Chapter 3.2

3.2.1 Under the explanation of Column 2, delete "of organic substances" in the last sentence.

Dangerous Goods List

In the Dangerous Goods List, when the same UN number applies to both the liquid and solid form of a substance, the liquid entry is always to be listed first. (In the existing list, this modification concerns only UN 2511).

Wherever they appear in Column 6 of the Dangerous Goods List, delete special provisions "15", "18", "36", "78", "107", "109", "222", "268" and "287".

Wherever it appears throughout Chapter 3.2:

- For all substances assigned to IBC08, packing group III : apply B3;
- For all substances assigned to IBC08, packing groups I or II : apply B4;
- For all substances assigned to IBC08, packing group III (other than those of Division 4.3): delete B4;
- For all substances assigned to IBC08: delete B3 when B4 is also applied.

Column (7) (Limited quantities): Amend the limits* indicated in this column in accordance with the following criteria:

- Class 3, packing group II: General limit 1L except for UN numbers: 1133, 1139, 1169, 1197, 1210, 1263, 1266, 1287, 1306, 1866, 1999, 3065 and 3269 for which the limit will be 5 L;

- Division 4.1, packing group II, for substances currently authorized to be transported as limited quantities only: 1 kg;

- Division 4.1, packing group III, for substances currently authorized to be transported as limited quantities only: 5 kg;

- Division 5.1, packing group II: 1 L (for liquids); 1 kg (for solids);

- Division 5.1, packing group III: 5 L (for liquids); 5 kg (for solids);

- Division 6.1, packing group III: 5 L (for liquids); 5 kg (for solids);

- Class 8, packing group II: 1 L (for liquids); 1 kg (for solids);

- Class 8, packing group III: 5 L (for liquids); 5 kg (for solids);

- Class 9, packing group III: 5 L (for liquids); 5 kg (for solids).

Add the following new entries:

UN No.	Name and description	Class or Division	Subsidiary risk	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provision	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1153	ETHYLENE GLYCOL DIETHYL ETHER	3		II		1 L	P001 IBC02		T4	TP1
1372	FIBRES, ANIMAL or FIBRES, VEGETABLE burnt, wet or damp	4.2		III	117	NONE	P410			
1387	WOOL WASTE, WET	4.2		III	117	NONE	P410			
1856	RAGS, OILY	4.2			29 117	NONE	P003 IBC08	PP19 B6		
1857	TEXTILE WASTE, WET	4.2		III	117	NONE	P410			
3359	FUMIGATED UNIT	9			302	NONE	NONE			
3360	FIBRES, VEGETABLE, DRY	4.1			29 117 299	NONE	P003	PP19		

* *Applicable only when limits are already indicated; not applicable when the word "NONE" is indicated.*

UN No.	Name and description	Class or Division	Subsidiary risk	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provision	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3361	CHLOROSILANES, TOXIC, CORROSIVE, N.O.S.	6.1	8	II		NONE	P001 IBC01		T11	TP2 TP13
3362	CHLOROSILANES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S.	6.1	3, 8	II		NONE	P001 IBC01		T11	TP2 TP13
3363	DANGEROUS GOODS IN MACHINERY or DANGEROUS GOODS IN APPARATUS	9			301	NONE	P907			
3364	TRINITROPHENOL (PICRIC ACID), WETTED, with not less than 10% water by mass	4.1		I		NONE	P406	PP24		
3365	TRINITROCHLORO-BENZENE (PICRYL CHLORIDE), WETTED, with not less than 10% water by mass	4.1		I		NONE	P406	PP24		
3366	TRINITROTOLUENE (TNT), WETTED, with not less than 10% water by mass	4.1		I		NONE	P406	PP24		
3367	TRINITROBENZENE, WETTED, with not less than 10% water by mass	4.1		I		NONE	P406	PP24		
3368	TRINITROBENZOIC ACID, WETTED, with not less than 10% water by mass	4.1		I		NONE	P406	PP24		
3369	SODIUM DINITRO-o-CRESOLATE, WETTED, with not less than 10% water by mass	4.1		I		NONE	P406	PP24		
3370	UREA NITRATE, WETTED, with not less than 10% water by mass	4.1		I		NONE	P406	PP78		
3371	2-METHYLBUTANAL	3		II		1L	P001 IBC02		T4	TP1
3372	ORGANOMETALLIC COMPOUND, SOLID, WATER-REACTIVE, FLAMMABLE, N.O.S.	4.3	4.1	I	274	NONE	P403 IBC04			
		4.3	4.1	II	274	500 g	P410 IBC04			
		4.3	4.1	III	223 274	1 kg	P410 IBC06			
3373	DIAGNOSTIC SPECIMENS	6.2				NONE	P650			

UN No.	Name and description	Class or Division	Subsidiary risk	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provision	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3374	ACETYLENE, SOLVENT FREE	2.1					P200	PP23		
3375	AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives	5.1		II	306 309	NONE	P099 IBC99		T2	TP9
3376	4-NITROPHENYLHYDRAZINE, with not less than 30% water, by mass	4.1		I	28	NONE	P406	PP26		

Amend the following entries to read:

UN No.	Name and description	Class or Division	Subsidiary risk	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provision	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0503	AIR BAG INFLATORS, or AIR BAG MODULES, or SEAT-BELT PRETENSIONERS	1.4G			235 289	NONE	P135			
1942	AMMONIUM NITRATE, with not more than 0.2% total combustible material, including any organic substance, calculated as carbon to the exclusion of any other added substance.	5.1		III	306	1 kg	P002 IBC08 LP02	B3		
2030	HYDRAZINE AQUEOUS SOLUTION, with more than 37% hydrazine, by mass	8	6.1	I	298	NONE	P001		T20	TP2 TP13
		8	6.1	II		1 L	P001 IBC02		T15	TP2 TP13
		8	6.1	III		5 L	P001 IBC03 LP01		T4	TP2
2067	AMMONIUM NITRATE BASED FERTILIZER	5.1		III	186 306 307	1 kg	P002 IBC08 LP02			
2071	AMMONIUM NITRATE BASED FERTILIZER	9			186 193	5 kg	P002 IBC08 LP02			

UN No.	Name and description	Class or Division	Subsidiary risk	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provision	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3268	AIR BAG INFLATORS, or AIR BAG MODULES, or SEAT-BELT PRETENSIONERS	9		III	280 289	NONE	P902 LP902			

Amend the following entries as follows:

UN 0015 Delete "8" in column (4);

UN 0016 Delete "8" in column (4);

UN 0223 Delete this entry;

UN 0303 Delete "8" in column (4);

UN 0331 Add "(AGENT, BLASTING, TYPE B)" in column (2);

UN 0332 Add "(AGENT, BLASTING, TYPE E)" in column (2);

UN 1008 Amend the name in column (2) to read: "BORON TRIFLUORIDE"

UN 1040 Amend the name in column (2) to read: "ETHYLENE OXIDE, or ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1 MPa (10 bar) at 50 °C";

UN 1057 In column (2), delete "(cigarettes)";

UN 1062 Amend the name in column (2) to read: "METHYL BROMIDE with not more than 2% chloropicrin";

UN 1133 For packing group I: replace "NONE" with "500 ml" in column (7) ;

For packing group II: replace "1 L" with "5 L" in column (7);

UN 1139 For packing group I: replace "NONE" with "500 ml" in column (7);

For packing group II: replace "1 L" with "5 L" in column (7);

UN 1169 For packing group II: replace "1 L" with "5 L" in column (7);

UN 1177 Amend the name in column (2) to read: "2-ETHYLBUTYL ACETATE";

UN 1197 For packing group II: replace "1 L" with "5 L" in column (7);

UN 1210	For packing group I: replace "NONE" with "500 ml" in column (7); For packing group II: replace "1 L" with "5 L" in column (7);
UN 1263	For packing group I: replace "NONE" with "500 ml" in column (7); For packing group II: replace "1 L" with "5 L" in column (7);
UN 1266	For packing group II: replace "1 L" with "5 L" in column (7);
UN 1267	For packing group I: replace "NONE" with "500 ml" in column (7);
UN 1268	For packing group I: replace "NONE" with "500 ml" in column (7);
UN 1278	Amend the name in column (2) to read: "1-CHLOROPROPANE";
UN 1287	For packing group II: replace "1 L" with "5 L" in column (7);
UN 1306	For packing group II: replace "1 L" with "5 L" in column (7);
UN 1345	Add special provision "223" in column (6).
UN 1347	Add special provision "28" in column (6);
UN 1357	Add special provision "28" in column (6);
UN 1374	Insert special provision "300" in column (6);
UN 1381	Insert "TP31" in column (11);
UN 1422	Insert "TP31" in column (11);
UN 1428	Insert "TP31" in column (11);
UN 1556	For packing group I: insert "T14" in column (10) and "TP2", "TP9", "TP13" and "TP27" in column (11); For packing group II: insert "T11" in column (10) and insert "TP2", "TP13" and "TP27" in column (11); For packing group III: insert "T7" in column (10) and insert "TP2" and "TP28" in column (11);
UN 1571	Add special provision "28" in column (6);
UN 1579	Add "T4" and "TP1" in column (10) and (11) respectively;
UN 1581	Amend the name in column (2) to read: "CHLOROPICRIN AND METHYL BROMIDE MIXTURE with more than 2% chloropicrin";

UN 1614 Replace "P200" with "P099" in column (8);

UN 1702 Amend the name in column (2) to read : "1,1,2,2-TETRACHLOROETHANE";

UN 1790 For packing group I: add "PP79" and "PP81" in column (9);

UN 1841 Replace "NONE" with "5 kg" in column (7);

UN 1859 Amend the name in column (2) to read: "SILICON TETRAFLUORIDE";

UN 1863 For packing group I: replace "NONE" with "500 ml" in column (7) and add "TP28" in column (11);

UN 1866 For packing group I: replace "NONE" with "500 ml" in column (7) and add "TP28" in column (11);

For packing group II: replace "1 L" with "5 L" in column (7);

UN 1906 Add "TP28" in column (11);

UN 1911 Amend the name in column (2) to read: "DIBORANE";

UN 1962 Amend the name in column (2) to read: "ETHYLENE";

UN 1982 Amend the name in column (2) to read: "TETRAFLUOROMETHANE (REFRIGERANT GAS R14);

UN 1993 For packing group I: Add "TP27" in column (11);

UN 1999 For packing group II: replace "1 L" with "5 L" in column (7);

UN 2031 For packing groups I and II: replace "P802" with "P001" in column (8) and add "PP81" in column (9);

UN 2036 Amend the name in column (2) to read: "XENON";

UN 2037 Delete special provision "63" in column (6) and add special provision "303";

UN 2068 Delete this entry;

UN 2069 Delete this entry;

UN 2070 Delete this entry;

UN 2072 Delete this entry;

UN 2193 Amend the name in column (2) to read: "HEXAFLUOROETHANE (REFRIGERANT GAS R116)";

UN 2198 Amend the name in column (2) to read : "PHOSPHORUS PENTAFLUORIDE";

UN 2203 Amend the name in column (2) to read : "SILANE";

UN 2212 Replace "NONE" with "1 kg" in column (7);

UN 2216 Insert special provisions "300" and "308" in column (6);

UN 2249 Add "3" in column (4);

UN 2257 Insert "TP31" in column (11);

UN 2264 Amend the name in column (2) to read: "N, N-DIMETHYLCYCLOHEXYLAMINE";

UN 2277 Amend the name in column (2) to read: "ETHYL METHACRYLATE, STABILIZED";

UN 2315 Add special provision "305" in column (6) and insert "1L" in column (7);

UN 2417 Amend the name in column (2) to read: "CARBONYL FLUORIDE";

UN 2451 Amend the name in column (2) to read: "NITROGEN TRIFLUORIDE";

UN 2531 Insert "TP30" in column (11);

UN 2571 Add "TP28" in column (11);

UN 2579 Insert "TP30" in column (11);

UN 2672 Add new special provision "B11" in column (9);

UN 2680 Amend the name in column (2) to read: "LITHIUM HYDROXIDE";

UN 2684 Amend the name in column (2) to read: "3-DIETHYLAMINOPROPYLAMINE";

UN 2699 Replace "P802" with "P001" in column (8);

UN 2740 Insert "T20" in column (10) and insert "TP2" and "TP13" in column (11);

UN 2793 Delete special provision "107" in column (6) and add special provision "223";

UN 2797 Add "TP28" in column (11);

UN 2852 Add special provision "28" in column (6);

UN 2870 Delete special provision "78" in column (6);

UN 2880 Amend the proper shipping name in column (2) to read:

"CALCIUM HYPOCHLORITE, HYDRATED, or CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, with not less than 5.5% but not more than 16% water";

UN 2907 Add "B12" and "PP80" in column (9);

UN 2969 Replace "NONE" with "5 kg" in column (7);

UN 3027 Delete the portable tank instructions in columns (10) and (11);

UN 3028 Add special provision "304" in column (6);

UN 3052 For the solid entry, delete the portable tank instructions in columns (10) and (11);

UN 3065 For packing group II: replace "1 L" with "5 L" in column (7);

UN 3090 Add special provision "310" in column (6);

UN 3151 Add special provision "305" in column (6) and replace "NONE" with "1 L" in column (7);

UN 3152 Add special provision "305" in column (6) and replace "NONE" with "1kg" in column (7);

UN 3166 Amend the name in column (2) to read as follows:

"ENGINE, INTERNAL COMBUSTION or VEHICLE, FLAMMABLE GAS, POWERED or VEHICLE, FLAMMABLE LIQUID, POWERED";

UN 3221 Replace "NONE" with "25 ml" in column (7);

UN 3222 Replace "NONE" with "100 g" in column (7);

UN 3223 Replace "NONE" with "25 ml" in column (7);

UN 3224 Replace "NONE" with "100 g" in column (7);

UN 3225 Replace "NONE" with "125 ml" in column (7);

UN 3226 Replace "NONE" with "500 g" in column (7);

UN 3227 Replace "NONE" with "125 ml" in column (7);

UN 3228 Replace "NONE" with "500 g" in column (7);

UN 3229 Replace "NONE" with "125 ml" in column (7);

UN 3230 Replace "NONE" with "500 g" in column (7);

UN 3250 Add "TP28" in column (11);

UN 3269 For packing group II: replace "1 L" with "5 L" in column (7);

UN 3270 Replace "NONE" with "1 kg" in column (7);

UN 3279 For packing group I: add TP 27 in column (11);

UN 3295 For packing group I: replace "NONE" with "500 ml" in column (7) and add "TP28" in column (11);

UN 3344 Add "PP80" in column (9);

UN 3353 Delete this entry;

Chapter 3.3

SP15 Delete.

SP18 Delete.

SP 29 Delete the words "and the packing group" at the end of the sentence.

SP 36 Delete.

SP 63 Amend to read as follows:

"The division of Class 2 and the subsidiary risks depend on the nature of the contents of the aerosol dispenser. The following provisions shall apply:

(a) Division 2.1 applies if the contents include more than 45% by mass, or more than 250 g of flammable components. Flammable components are gases which are flammable in air at normal pressure or substances or preparations in liquid form which have a flash point less than or equal to 100 °C;

(b) Division 2.2 applies when the contents do not meet the above criteria for Division 2.1;

(c) Gases of Division 2.3 shall not be used as a propellant in an aerosol dispenser;

(d) Where the contents other than the propellant of aerosol dispensers to be ejected are classified as Division 6.1 packing groups II or III or Class 8 packing groups II or III, the aerosol shall have a subsidiary risk of Division 6.1 or Class 8;

(e) Aerosols with contents meeting the criteria for packing group I for toxicity or corrosivity shall be prohibited from transport;

(f) Subsidiary risk labels may be required for air transport.".

SP 78 Delete.

SP 107 Delete.

SP 109 Delete.

SP 117 Delete the two last sentences.

SP 119 Amend the last sentence to read: "Refrigerating machines and refrigerating machine components are not subject to these Regulations if they contain less than 12 kg of gas in Division 2.2 or less than 12 litres ammonia solution (UN 2672).".

SP 162 Replace "23 °C with "60.5 °C".

SP 188 Amend to read as follows:

"Lithium cells and batteries offered for transport are not subject to other provisions of these Regulations if they meet the following:

(a) For a lithium metal or lithium alloy cell, the lithium content is not more than 1 g, and for a lithium-ion cell, the equivalent lithium content is not more than 1.5 g;

(b) For a lithium metal or lithium alloy battery the aggregate lithium content is not more than 2 g, and for a lithium-ion battery, the aggregate equivalent lithium content is not more than 8 g;

(c) Each cell or battery is of the type proved to meet the requirements of each test in the *Manual of Tests and Criteria*, Part III, sub-section 38.3;

(d) Cells and batteries are separated so as to prevent short circuits and are packed in strong packagings, except when installed in equipment; and

(e) Except when installed in equipment, each package containing more than 24 lithium cells or 12 lithium batteries shall in addition meet the following requirements:

(i) Each package shall be marked indicating that it contains lithium batteries and that special procedures should be followed in the event that the package is damaged;

(ii) Each shipment shall be accompanied with a document indicating that packages contain lithium batteries and that special procedures should be followed in the event a package is damaged;

(iii) Each package is capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents; and

(iv) Except in the case of lithium batteries packed with equipment, packages may not exceed 30 kg gross mass.

As used above and elsewhere in these Regulations, "lithium content" means the mass of lithium in the anode of a lithium metal or lithium alloy cell, except in the case of a lithium-ion cell the "equivalent lithium content" in grams is calculated to be 0.3 times the rated capacity in ampere-hours.".

SP 190 Delete the first sentence.

SP 191 Replace "see Special Provision 190" with "Receptacles with a capacity not exceeding 50 ml containing only non-toxic constituents are not subject to these Regulations.".

SP 193 Amend to read as follows:

"This entry may only be used for uniform ammonium nitrate based fertilizer mixtures of the nitrogen, phosphate or potash type, containing not more than 70% ammonium nitrate and not more than 0.4% total combustible/organic material calculated as carbon or with not more than 45% ammonium nitrate and unrestricted combustible material. Fertilizers within these composition limits are only subject to these Regulations when transported by air or sea and are not subject to these Regulations if shown by a Trough Test (see *Manual of Tests and Criteria*, Part III, sub-section 38.2) not to be liable to self-sustaining decomposition.".

SP 196 Amend to read as follows:

"Formulations which in laboratory testing neither detonate in the cavitated state nor deflagrate, which show no effect when heated under confinement and which exhibit no explosive power may be transported under this entry. The formulation must also be thermally stable (i.e. the SADT is 60 °C or higher for a 50 kg package). Formulations not meeting these criteria shall be transported under the provisions of Division 5.2, see 2.5.3.2.4.".

SP 216 Amend the end of the paragraph to read:

"Each transport unit shall be leakproof when used as a bulk packaging. Sealed packets containing less than 10 ml of a packing group II or III flammable liquid absorbed into a solid material are not subject to these Regulations provided there is no free liquid in the packet.".

SP 217 and 218 Replace the sentence "Each transport unit shall be leakproof." with "Each transport unit shall be leakproof when used as a bulk packaging.".

SP 222 Delete.

SP 227 Delete the first sentence.

SP 230 Replace at the beginning "entries" with "entry".

Amend (a) to read: "(a) Each cell or battery is of the type proved to meet the requirements of each test of the *Manual of Tests and Criteria*, Part III, sub-section 38.3;".

SP 235 Amend to read as follows:

"This entry applies to articles which contain Class 1 explosive substances and which may also contain dangerous goods of other classes. These articles are used as life-saving vehicle air bag inflators or air bag modules or seat-belt pretensioners.".

SP 242 Delete: "when it is transported in quantities of less than 400 kg per package, or".

SP 251 Add the following text:

"Chemical kits and first aid kits containing dangerous goods in inner packagings which do not exceed the quantity limits applicable to individual substances as specified in Column 7 of the Dangerous Goods List may be transported in accordance with Chapter 3.4.".

SP 268 Delete.

SP 280 Amend to read as follows:

"This entry applies to articles which are used as life-saving vehicle air bag inflators, or air bag modules or seat-belt pretensioners and which contain dangerous goods of Class 1 or dangerous goods of other classes and when transported as component parts and when these articles as presented for transport have been tested in accordance with Test series 6 (c) of Part I of the *Manual of Tests and Criteria*, with no explosion of the device, no fragmentation of device casing or pressure vessel, and no projection hazard nor thermal effect which would significantly hinder fire-fighting or other emergency response efforts in the immediate vicinity.".

SP 287 Delete.

SP 291 Amend the last sentence to read:

"Refrigerating machines and refrigerating-machine components are not subject to these Regulations if they contain less than 12 kg of gas.".

SP 297 Amend the first paragraph to read:

"For air transport, arrangements between consignor and operator(s) shall be made for each consignment, to ensure that ventilation safety procedures are followed.".

Add the following new special provisions:

"298 Solutions with a flash point of 60.5 °C or less shall bear a FLAMMABLE LIQUID label.

299 Consignments of COTTON, DRY having a density not less than 360 kg/m^3 according to ISO 8115:1986 are not subject to these Regulations when transported in closed transport units.

300 Fish meal or fish scrap shall not be transported if the temperature at the time of loading exceeds 35 °C or 5 °C above the ambient temperature whichever is higher.

301 This entry only applies to machinery or apparatus containing dangerous substances as a residue or an integral element of the machinery or apparatus. It shall not be used for machinery or apparatus for which a proper shipping name already exists in the Dangerous Goods List. Machinery and apparatus transported under this entry shall only

contain dangerous goods which are authorized to be transported in accordance with the provisions of Chapter 3.4 (Limited quantities). The quantity of dangerous goods in machinery or apparatus shall not exceed the quantity specified in Column 7 of the Dangerous Goods List for each item of dangerous goods contained. If the machinery or apparatus contains more than one item of dangerous goods, the individual substances shall not be capable of reacting dangerously with one another (see 4.1.1.6). When it is required to ensure liquid dangerous goods remain in their intended orientation, package orientation labels meeting the specifications of ISO 780:1985 shall be affixed on at least two opposite vertical sides with the arrows pointing in the correct direction.
The competent authority may exempt from regulation machinery or apparatus which would otherwise be transported under this entry. The transport of dangerous goods in machinery or apparatus where the quantity of dangerous goods exceeds the quantity specified in Column 7 of the Dangerous Goods List is authorized when approved by the competent authority.

302 In the proper shipping name, the word "UNIT" means:

a road freight vehicle;
a railway freight wagon;
a freight container;
a road tank vehicle;
a railway tank wagon; or
a portable tank.

Except when transported by sea, fumigated units are only subject to the provisions of 5.5.2.

303 The classification of UN 2037 shall be based on the gases contained therein and in accordance with the provisions of Chapter 2.2.

304 Batteries, dry, containing corrosive electrolyte which will not flow out of the battery if the battery case is cracked are not subject to these Regulations provided the batteries are securely packed and protected against short-circuits. Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries.

305 These substances are not subject to these Regulations when in concentrations of not more than 50 mg/kg.

306 This entry may only be used for substances that do not exhibit explosive properties of Class 1 when tested in accordance to Test Series 1 and 2 of Class 1 (see *Manual of Tests and Criteria*, Part I).

307 This entry may only be used for uniform mixtures containing ammonium nitrate as the main ingredient within the following composition limits:

(a) Not less than 90 % ammonium nitrate with not more than 0.2% total combustible/organic material calculated as carbon and with added matter, if any, which is inorganic and inert towards ammonium nitrate ; or

(b) Less than 90% but more than 70% ammonium nitrate with other inorganic materials or more than 80% but less than 90% ammonium nitrate mixed with calcium carbonate and/or dolomite and not more than 0.4% total combustible/organic material calculated as carbon; or

(c) Nitrogen type ammonium nitrate based fertilizers containing mixtures of ammonium nitrate and ammonium sulphate with more than 45% but less than 70% ammonium nitrate and not more than 0.4% total combustible/organic material calculated as carbon such that the sum of the percentage compositions of ammonium nitrate and ammonium sulphate exceeds 70%.

308 Fish scrap or fish meal shall contain at least 100 ppm of antioxidant (ethoxyquin) at the time of consignment.

309 This entry applies to non sensitised emulsions, suspensions and gels consisting primarily of a mixture of ammonium nitrate and a fuel phase, intended to produce a Type E blasting explosive only after further processing prior to use. The mixture typically has the following composition: 60 - 85 % ammonium nitrate; 5 - 30% water; 2 - 8% fuel; 0.5 - 4 % emulsifier or thickening agent; 0 - 10 % soluble flame supressants and trace additives. Other inorganic nitrate salts may replace part of the ammonium nitrate. These substances shall not be classified and transported unless authorized by the competent authority.

310 The testing requirements in Chapter 38.3 of the *Manual of Tests and Criteria* do not apply to production runs consisting of not more than 100 lithium cells and batteries, or to pre-production prototypes of lithium cells and batteries when these prototypes are transported for testing, if:

(a) the cells and batteries are transported in an outer packaging that is a metal, plastic or plywood drum or a metal, plastic or wooden box and that meets the criteria for packing group I packagings; and

(b) each cell and battery is individually packed in an inner packaging inside an outer packaging and is surrounded by cushioning material that is non-combustible, and non-conductive.".

Chapter 3.4

3.4.1 In the second sentence, add "for the inner packaging or article" after "The applicable quantity limit".

3.4.8 Insert the following paragraph and renumber existing 3.4.8 accordingly "3.4.9":

"3.4.8 Packages containing dangerous goods in limited quantities need not be marked with the proper shipping name of the contents, but shall be marked with the UN number of the contents (preceded by the letters "UN") placed within a diamond. The width of line forming the diamond shall be at least 2 mm; the number shall be at least 6 mm high. Where more than one substance assigned to different UN numbers are included in the package, the diamond shall be large enough to include each relevant UN number.".

PART 4

Chapter 4.1

Delete the Introductory notes (Notes 1 and 2).

4.1.1 Amend the title to read: "**General provisions for the packing of dangerous goods in packagings, including IBCs and large packagings.**"

Amend the note under the title to read:

"***NOTE**: The general provisions of this section only apply to the packing of goods of Class 2, Division 6.2 and Class 7 as indicated in 4.1.8.2 (Division 6.2), 4.1.9.1.5 (Class 7) and in the applicable packing instructions of 4.1.4 (packing instructions P201 and P202 for Class 2 and P621, IBC620 and LP621 for Division 6.2).*"

4.1.1.1 Amend to read as follows:

"4.1.1.1 Dangerous goods shall be packed in good quality packagings, including IBCs and large packagings, which shall be strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between transport units and between transport units and warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings, including IBCs and large packagings, shall be constructed and closed as to prevent any loss of contents when prepared for transport which may be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure (resulting from altitude, for example). Packagings, including IBCs and large packagings, shall be closed in accordance with the information provided by the manufacturer. No dangerous residue shall adhere to the outside of packages, IBCs and large packagings during transport. These provisions apply, as appropriate, to new, reused, reconditioned or remanufactured packagings, and to new, reused, repaired or remanufactured IBCs, and to new or reused large packagings.".

4.1.1.3 and 4.1.1.9 Add "6.3.2" after "6.1.5" and replace "respectively" with "as applicable".

4.1.1.12(c) Amend to read:

"(c) after the repair or remanufacture of any IBC, before it is re-used for transport.".

4.1.1.15 Add the following new paragraph:

"4.1.1.15 *Explosives, self-reactive substances and organic peroxides*

Unless specific provision to the contrary is made in these Regulations, the packagings, including IBCs and large packagings, used for goods of Class 1, self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 shall comply with the provisions for the medium danger group (packing group II).".

Renumber following paragraph and sub-paragraphs accordingly.

4.1.1.16.1 (Former 4.1.1.15.1) Amend to read as follows:

"4.1.1.16.1 Damaged, defective, leaking or non-conforming packages, or dangerous goods that have spilled or leaked may be transported in salvage packagings mentioned in 6.1.5.1.11. This does not prevent the use of a bigger size packaging of appropriate type and performance level under the conditions of 4.1.1.16.2.".

4.1.2.5 Add a new 4.1.2.5 to read as follows:

"4.1.2.5 Except for routine maintenance of metal, rigid plastics and composite IBCs performed by the owner of the IBC, whose State and name or authorized symbol is durably marked on the IBC, the party performing routine maintenance shall durably mark the IBC near the manufacturer's UN design type marking to show:

(a) The State in which the routine maintenance was carried out; and

(b) The name or authorized symbol of the party performing the routine maintenance."

4.1.3.4 Amend the text concerning IBCs to read as follows:

"IBCs

For substances of packing group I:

All types of IBCs;

For substances of packing groups II and III:

Wooden:	11C, 11D and 11F
Fibreboard:	11G
Flexible:	13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2
Composite:	11HZ2 and 21HZ2.".

4.1.3.6 Amend to read as follows:

"4.1.3.6 Cylinders, bundles of cylinders, pressure drums and tubes conforming to the construction requirements of packing instruction P200 are authorized for the transport of any liquid or solid substance assigned to packing instructions P001 or P002 unless otherwise indicated in the packing instruction or by a special provision in column 9 of the Dangerous Goods List. The capacity of bundles of cylinders and tubes shall not exceed 1000 litres."

4.1.3.8 Add a new section 4.1.3.8 as follows:

"4.1.3.8 *Unpackaged articles other than Class 1 articles*

4.1.3.8.1 Where large and robust articles cannot be packaged in accordance with the requirements of Chapters 6.1 or 6.6 and they have to be transported empty, uncleaned and unpackaged, the competent authority may approve such transport. In doing so the competent authority shall take into account that:

(a) Large and robust articles shall be strong enough to withstand the shocks and loadings normally encountered during transport including trans-shipment between transport units and between transport units and warehouses, as well as any removal from a pallet for subsequent manual or mechanical handling;

(b) All closures and openings shall be sealed so that there can be no loss of contents which might be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure (resulting from altitude, for example). No dangerous residue shall adhere to the outside of the large and robust articles;

(c) Parts of large and robust articles, which are in direct contact with dangerous goods:

(i) shall not be affected or significantly weakened by those dangerous goods; and
(ii) shall not cause a dangerous effect e.g. catalysing a reaction or reacting with the dangerous goods;

(d) Large and robust articles containing liquids shall be stowed and secured to ensure that neither leakage nor permanent distortion of the article occurs during transport;

(e) They shall be fixed in cradles or crates or other handling devices in such a way that they will not become loose during normal conditions of transport.

4.1.3.8.2 Unpackaged articles approved by the competent authority in accordance with the provisions of 4.1.3.8.1 shall be subject to the consignment procedures of Part 5. In addition the consignor of such articles shall ensure that a copy of any such approval is transported with the large and robust articles.

NOTE: *A large and robust article may include flexible fuel containment systems, military equipment, machinery or equipment containing dangerous goods above the limited quantity thresholds.*".

4.1.4.1 Add "plywood (1D)" in the column "Outer packagings" under "Drums" for packing instructions P112 (a), P112 (b), P112 (c), P113, P116, P130, P131, P134, P135, P136, P138, P140, P141 and P142.

Add "plastics, removable head (1H2)" in the column "Outer packagings" under "Drums" for packing instructions P112(c), P113, P115, P134, P138 and P140.

Add "fibreboard (1G)" in the column "Outer packagings" under "Drums" for packing instructions P134 and P138.

Add "steel, removable head (1A2)", "aluminium, removable head (1B2)" and "plastics, removable head (1H2)" in the column "Outer packagings" under "Drums" for packing instruction P144.

Add "aluminium (4B)" in the column "Outer packagings" under "Boxes" for packing instructions P112 (c) and P113.

Add "plastics, solid (4H2)" in the column "Outer packagings" under "Boxes" for packing instruction P144.

P001: Delete the asterisk against "250 *l*" for packing group I for "plastics non-removable head drums (1H1)".

Add a new special packing provision to read as follows:

"PP81 For UN 1790 with not more than 85% hydrofluoric acid and UN 2031 with more than 55% nitric acid, the permitted use of plastics drums and jerricans as single packagings shall be two years from their date of manufacture.".

P002: In PP11 under the heading "Special packing provisions", replace "or" with "and" after "plastics bags".

P003: In PP19 under the heading "Special packing provisions", add "1856" and "3360".

P200: Replace the existing P200 with the following:

P200	PACKING INSTRUCTION	P200

For pressure receptacles, the general packing requirements of 4.1.6.1 shall be met. In addition, for MEGCs, the general requirements of 4.2.4 shall be met.

Cylinders, tubes, pressure drums, bundles of cylinders constructed as specified in 6.2 and MEGCs constructed as specified in 6.7.5 are authorised for the transport of a specific substance when specified in the following tables. For some substances the special packing provisions may prohibit a particular type of cylinder, tube, pressure drum or bundle of cylinders.

(1) Pressure receptacles containing toxic substances with an LC_{50} less than or equal to 200 ml/m^3 (ppm) as specified in the table shall not be equipped with any pressure relief device. Pressure relief devices shall be fitted on pressure receptacles used for the transport of UN 1013 carbon dioxide and UN 1070 nitrous oxide. Other pressure receptacles shall be fitted with a pressure relief device if specified by the competent authority of the country of use. The type of pressure relief device, the set to discharge pressure and relief capacity of pressure relief devices, if required, shall be specified by the competent authority of the country of use.

(2) The following three tables cover compressed gases (Table 1), liquefied and dissolved gases (Table 2) and substances not in Class 2 (Table 3). They provide:

(a) the UN number, name and description, and classification of the substance;

(b) the LC_{50} for toxic substances;

(c) the types of pressure receptacles authorised for the substance, shown by the letter "X";

(d) the maximum test period for periodic inspection of the pressure receptacles;

(e) the minimum test pressure of the pressure receptacles;

(f) the maximum working pressure of the pressure receptacles for compressed gases (where no value is given, the working pressure shall not exceed two thirds of the test pressure) or the maximum filling ratio(s) dependent on the test pressure(s) for liquefied and dissolved gases;

(g) special packing provisions that are specific to a substance.

P200 **PACKING INSTRUCTION (cont'd)** **P200**

(3) In no case shall pressure receptacles be filled in excess of the limit permitted in the following requirements.

(a) For compressed gases, the working pressure shall be not more than two thirds of the test pressure of the pressure receptacles. Restrictions to this upper limit on working pressure are imposed by special packing provision "o". In no case shall the internal pressure at 65 °C exceed the test pressure.

(b) For high pressure liquefied gases, the filling ratio shall be such that the settled pressure at 65 °C does not exceed the test pressure of the pressure receptacles.

The use of test pressures and filling ratios other than those in the table is permitted provided that the above criterion is met, except where special packing provision "o" applies.

For high pressure liquefied gases for which data is not provided in the table, the maximum filling ratio (FR) shall be determined as follows:

$$FR = 8.5 \times 10^{-4} \times d_g \times P_h$$

where FR = maximum filling ratio
d_g = gas density (at 15 °C, 1 bar)(in g/l)
P_h = minimum test pressure (in bar)

If the density of the gas is unknown, the maximum filling ratio shall be determined as follows:

$$FR = \frac{P_h \times MM \times 10^{-3}}{R \times 338}$$

where FR = maximum filling ratio
P_h = minimum test pressure (in bar)
MM = molecular mass (in g/mol)
R = 8.31451×10^{-2} bar.l/mol.K (gas constant)

For gas mixtures, the average molecular mass is to be taken, taking into account the volumetric concentrations of the various components.

(c) For low pressure liquefied gases, the maximum mass of contents per litre of water capacity (filling factor) shall equal 0.95 times the density of the liquid phase at 50 °C; in addition, the liquid phase shall not fill the pressure receptacle at any temperature up to 60 °C. The test pressure of the pressure receptacle shall be at least equal to the vapour pressure (absolute) of the liquid at 65 °C, minus 100 kPa (1 bar).

For low pressure liquefied gases for which filling data is not provided in the table, the maximum filling ratio shall be determined as follows:

$$FR = (0.0032 \times BP - 0.24) \times d_l$$

where FR = maximum filling ratio
BP = boiling point (in Kelvin)
d_l = density of the liquid at boiling point (in kg/l)

P200	PACKING INSTRUCTION (cont'd)	P200

(d) For UN 1001, acetylene, dissolved, and UN 3374 acetylene, solvent free, see (4), special packing provision p.

(4) Keys for the column "Special packing provisions":

Material compatibility (for gases see ISO 11114-1:1997 and ISO 11114-2:2000)

a: Aluminium alloy pressure receptacles are not authorized.

b: Copper valves shall not be used.

c: Metal parts in contact with the contents shall not contain more than 65% copper.

d: When steel pressure receptacles are used, only those bearing the "H" mark shall be authorized.

Requirements for toxic substances with an LC_{50} less than or equal to 200 ml/m^3 (ppm)

k: Valve outlets shall be fitted with gas tight plugs or caps.

Each cylinder within a bundle shall be fitted with an individual valve that shall be closed during transport. After filling, the manifold shall be evacuated, purged and plugged.

The pressure receptacle(s) shall:

(i) have a test pressure greater than or equal to 200 bar and a minimum wall thickness of 3.5 mm for aluminium alloy or 2 mm for steel; or

(ii) have an outer packaging meeting the packing group I performance level.

Pressure receptacles shall not be fitted with a pressure relief device.

Cylinders and individual cylinders in a bundle shall be limited to a maximum water capacity of 85 litres.

Each valve shall have a taper threaded connection directly to the pressure receptacle and be capable of withstanding the test pressure of the pressure receptacle.

Each valve shall either be of the packless type with non-perforated diaphragm, or be of a type which prevents leakage through or past the packing.

Each pressure receptacle shall be tested for leakage after filling.

P200	PACKING INSTRUCTION (cont'd)	P200

Gas specific provisions

l: UN 1040 ethylene oxide may also be packed in hermetically sealed glass or metal inner packagings suitably cushioned in fibreboard, wooden or metal boxes meeting the packing group I performance level. The maximum quantity permitted in any glass inner packaging is 30 g, and the maximum quantity permitted in any metal inner packaging is 200 g. After filling, each inner packaging shall be determined to be leak-tight by placing the inner packaging in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55 °C is achieved. The total quantity in any outer packaging shall not exceed 2.5 kg.

m: Pressure receptacles shall be filled to a working pressure not exceeding 5 bar.

n: A pressure receptacle shall contain not more than 5 kg of the gas.

o: In no case shall the working pressure or filling ratio shown in the table be exceeded.

p: For UN 1001 acetylene, dissolved, and UN 3374 acetylene, solvent free: cylinders shall be filled with a homogeneous monolithic porous mass; the working pressure and the quantity of acetylene shall not exceed the values prescribed in the approval or in ISO 3807-1:2000 or ISO 3807-2:2000, as applicable.

For UN 1001 acetylene, dissolved,: cylinders shall contain a quantity of acetone or suitable solvent as specified in the approval (see ISO 3807-1:2000 or ISO 3807-2:2000, as applicable); cylinders fitted with pressure relief devices or manifolded together shall be transported vertically.

The test pressure of 52 bar applies only to cylinders conforming to ISO 3807-2:2000.

q: The valves of pressure receptacles for pyrophoric gases or flammable mixtures of gases containing more than 1% of pyrophoric compounds shall be fitted with gas-tight plugs or caps. When these pressure receptacles are manifolded in a bundle, each of the pressure receptacles shall be fitted with an individual valve that shall be closed during transport, and the manifold outlet valve shall be fitted with a gas-tight plug or cap.

s: Aluminium alloy pressure receptacles shall be:

- Equipped only with brass or stainless steel valves; and
- Cleaned in accordance with ISO 11621:1997 and not contaminated with oil.

Periodic inspection

u: The interval between periodic tests may be extended to 10 years for aluminium alloy pressure receptacles when the alloy of the pressure receptacle has been subjected to stress corrosion testing as specified in ISO 7866:1999.

v: The interval between periodic inspections for steel cylinders may be extended to 15 years if approved by the competent authority of the country of use.

P200	PACKING INSTRUCTION (cont'd)	P200

Requirements for N.O.S. descriptions and for mixtures

z: The construction materials of the pressure receptacles and their accessories shall be compatible with the contents and shall not react to form harmful or dangerous compounds therewith.

The test pressure and filling ratio shall be calculated in accordance with the relevant requirements of (3).

Toxic substances with an LC_{50} less than or equal to 200 ml/m^3 shall not be transported in tubes, pressure drums or MEGCs and shall meet the requirements of special packing provision k.

For pressure receptacles containing pyrophoric gases or flammable mixtures of gases containing more than 1% pyrophoric compounds, the requirements of special packing provision q shall be met.

The necessary steps shall be taken to prevent dangerous reactions (i.e. polymerisation or decomposition) during transport. If necessary, stabilisation or addition of an inhibitor shall be required.

Mixtures containing UN 1911 diborane, shall be filled to a pressure such that, if complete decomposition of the diborane occurs, two thirds of the test pressure of the pressure receptacle shall not be exceeded.

P200	PACKING INSTRUCTION (cont'd)												P200
Table 1: COMPRESSED GASES													
UN No.	Name and description	Class or Division	Subsidiary risk	LC$_{50}$ ml/m^3	Cylinders	Tubes	Pressure drums	Bundles of cylinders	MEGCs	Test period, years	Test pressure, bar[1]	Working pressure, bar[1]	Special packing provisions
1002	AIR, COMPRESSED	2.2			X	X	X	X	X	10			
1006	ARGON, COMPRESSED	2.2			X	X	X	X	X	10			
1014	CARBON DIOXIDE AND OXYGEN MIXTURE, COMPRESSED	2.2	5.1		X	X	X	X	X	10			
1016	CARBON MONOXIDE, COMPRESSED	2.3	2.1	3760	X	X	X	X	X	5			u
1023	COAL GAS, COMPRESSED	2.3	2.1		X	X	X	X	X	5			
1045	FLUORINE, COMPRESSED	2.3	5.1 8	185	X			X		5	200	30	a, k, n, o
1046	HELIUM, COMPRESSED	2.2			X	X	X	X	X	10			
1049	HYDROGEN, COMPRESSED	2.1			X	X	X	X		10			d
1056	KRYPTON, COMPRESSED	2.2			X	X	X	X	X	10			
1065	NEON, COMPRESSED	2.2			X	X	X	X	X	10			
1066	NITROGEN, COMPRESSED	2.2			X	X	X	X	X	10			
1071	OIL GAS, COMPRESSED	2.3	2.1		X	X	X	X	X	5			
1072	OXYGEN, COMPRESSED	2.2	5.1		X	X	X	X		10			s
1612	HEXAETHYL TETRAPHOSPHATE AND COMPRESSED GAS MIXTURE	2.3			X	X	X	X		5			z
1660	NITRIC OXIDE, COMPRESSED	2.3	5.1 8	115	X			X		5	200	50	k, o
1953	COMPRESSED GAS, TOXIC, FLAMMABLE, N.O.S.	2.3	2.1		X	X	X	X	X	5			z
1954	COMPRESSED GAS, FLAMMABLE, N.O.S	2.1			X	X	X	X	X	10			z
1955	COMPRESSED GAS, TOXIC, N.O.S.	2.3			X	X	X	X	X	5			z
1956	COMPRESSED GAS, N.O.S.	2.2			X	X	X	X	X	10			z
1957	DEUTERIUM, COMPRESSED	2.1			X	X	X	X	X	10			d
1964	HYDROCARBON GAS MIXTURE, COMPRESSED, N.O.S	2.1			X	X	X	X	X	10			z
1971	METHANE, COMPRESSED or NATURAL GAS, COMPRESSED with high methane content	2.1			X	X	X	X	X	10			
1979	RARE GASES MIXTURE, COMPRESSED	2.2			X	X	X	X	X	10			

[1] *Where the entries are blank, the working pressure shall not exceed two thirds of the test pressure.*

P200	PACKING INSTRUCTION (cont'd)												P200
Table 1: COMPRESSED GASES (cont'd)													
UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m³	Cylinders	Tubes	Pressure drums	Bundles of cylinders	MEGCs	Test period, years	Test pressure, bar[1]	Working pressure, bar[1]	Special packing provisions
1980	RARE GASES AND OXYGEN MIXTURE, COMPRESSED	2.2			X	X	X	X	X	10			
1981	RARE GASES AND NITROGEN MIXTURE, COMPRESSED	2.2			X	X	X	X	X	10			
2034	HYDROGEN AND METHANE MIXTURE, COMPRESSED	2.1			X	X	X	X	X	10			d
2190	OXYGEN DIFLUORIDE, COMPRESSED	2.3	5.1 8	2.6	X			X		5	200	30	a, k, n, o
2600	CARBON MONOXIDE AND HYDROGEN MIXTURE, COMPRESSED	2.3	2.1		X	X	X	X	X	5			d, u
3156	COMPRESSED GAS, OXIDIZING, N.O.S.	2.2	5.1		X	X	X	X	X	10			z
3303	COMPRESSED GAS, TOXIC, OXIDIZING, N.O.S.	2.3	5.1		X	X	X	X	X	5			z
3304	COMPRESSED GAS, TOXIC, CORROSIVE, N.O.S.	2.3	8		X	X	X	X	X	5			z
3305	COMPRESSED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	2.3	2.1 8		X	X	X	X	X	5			z
3306	COMPRESSED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.	2.3	5.1 8		X	X	X	X	X	5			z

[1] *Where the entries are blank, the working pressure shall not exceed two thirds of the test pressure.*

P200 **PACKING INSTRUCTION (cont'd)** **P200**

Table 2: LIQUEFIED GASES AND DISSOLVED GASES

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	MEGCs	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
1001	ACETYLENE, DISSOLVED	2.1			X		X			10	60 52		c, p
1005	AMMONIA, ANHYDROUS	2.3	8	4000	X	X	X	X	X	5	33	0.53	b
1008	BORON TRIFLUORIDE	2.3	8	387*	X	X	X	X	X	5	225 300	0.715 0.86	
1009	BROMOTRIFLUOROMETHANE (REFRIGERANT GAS R 13B1)	2.2			X	X	X	X	X	10	42 120 250	1.13 1.44 1.60	
1010	BUTADIENES, STABILIZED (1,2-butadiene), or	2.1			X	X	X	X	X	10	10	0.59	
1010	BUTADIENES, STABILIZED (1,3-butadiene), or	2.1			X	X	X	X	X	10	10	0.55	
1010	BUTADIENES, STABILIZED (mixtures of 1,3-butadiene and hydrocarbons)	2.1			X	X	X	X	X	10	10	0.50	z
1011	BUTANE	2.1			X	X	X	X	X	10	10	0.51	v
1012	BUTYLENE (butylenes mixture) or	2.1			X	X	X	X	X	10	10	0.50	z
1012	BUTYLENE (1-butylene) or	2.1			X	X	X	X	X	10	10	0.53	
1012	BUTYLENE (cis-2-butylene) or	2.1			X	X	X	X	X	10	10	0.55	
1012	BUTYLENE (trans-2-butylene)	2.1			X	X	X	X	X	10	10	0.54	
1013	CARBON DIOXIDE	2.2			X	X	X	X	X	10	190 250	0.66 0.75	
1015	CARBON DIOXIDE AND NITROUS OXIDE MIXTURE	2.2			X	X	X	X	X	10	250	0.75	
1017	CHLORINE	2.3	8	293	X	X	X	X	X	5	22	1.25	a
1018	CHLORODIFLUOROMETHANE (REFRIGERANT GAS R 22)	2.2			X	X	X	X	X	10	29	1.03	
1020	CHLOROPENTAFLUORO-ETHANE (REFRIGERANT GAS R 115)	2.2			X	X	X	X	X	10	25	1.08	
1021	1-CHLORO-1,2,2,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 124)	2.2			X	X	X	X	X	10	12	1.20	
1022	CHLOROTRIFLUOROMETHANE (REFRIGERANT GAS R 13)	2.2			X	X	X	X	X	10	100 120 190 250	0.83 0.90 1.04 1.10	
1026	CYANOGEN	2.3	2.1	350	X	X	X	X	X	5	100	0.70	u
1027	CYCLOPROPANE	2.1			X	X	X	X	X	10	20	0.53	

* *This LC_{50} value is under review.*

P200	PACKING INSTRUCTION (cont'd)												P200
TABLE 2: LIQUEFIED GASES AND DISSOLVED GASES (cont'd)													
1028	DICHLORODIFLUORO-METHANE (REFRIGERANT GAS R 12)	2.2			X	X	X	X	X	10	18	1.15	
1029	DICHLOROFLUOROMETHANE (REFRIGERANT GAS R 21)	2.2			X	X	X	X	X	10	10	1.23	
1030	1,1-DIFLUOROETHANE (REFRIGERANT GAS R 152a)	2.1			X	X	X	X	X	10	18	0.79	
1032	DIMETHYLAMINE, ANHYDROUS	2.1			X	X	X	X	X	10	10	0.59	b
1033	DIMETHYL ETHER	2.1			X	X	X	X	X	10	18	0.58	
1035	ETHANE	2.1			X	X	X	X	X	10	95 120 300	0.25 0.29 0.39	
1036	ETHYLAMINE	2.1			X	X	X	X	X	10	10	0.61	b
1037	ETHYL CHLORIDE	2.1			X	X	X	X	X	10	10	0.80	a
1039	ETHYL METHYL ETHER	2.1			X	X	X	X	X	10	10	0.64	
1040	ETHYLENE OXIDE, or ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1MPa (10 bar) at 50 °C	2.3	2.1	2900*	X	X	X	X	X	5	15	0.78	l
1041	ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with more than 9% ethylene oxide but not more than 87%	2.1			X	X	X	X	X	10	190 250	0.66 0.75	
1043	FERTILIZER AMMONIATING SOLUTION with free ammonia	2.2			X	X	X			5			b, z
1048	HYDROGEN BROMIDE, ANHYDROUS	2.3	8	2860	X	X	X	X	X	5	60	1.54	a, d
1050	HYDROGEN CHLORIDE, ANHYDROUS	2.3	8	2810*	X	X	X	X	X	5	100 120 150 200	0.30 0.56 0.67 0.74	a, d a, d a, d a, d
1053	HYDROGEN SULPHIDE	2.3	2.1	712	X	X	X	X	X	5	55	0.67	d, u
1055	ISOBUTYLENE	2.1			X	X	X	X	X	10	10	0.52	
1058	LIQUEFIED GASES, non-flammable, charged with nitrogen, carbon dioxide or air	2.2			X	X	X	X	X	10	Test pressure = 1.5 x working pressure		
1060	METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED or METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED (Propadiene with 1% to 4% methylacetylene)	2.1 2.1			X X	X X	X X	X X	X X	10 10	22	0.52	c, z c
1061	METHYLAMINE, ANHYDROUS	2.1			X	X	X	X	X	10	13	0.58	b
1062	METHYL BROMIDE	2.3		850	X	X	X	X	X	5	10	1.51	a

* *This LC_{50} value is under review.*

P200	PACKING INSTRUCTION (cont'd)												P200
	TABLE 2: LIQUEFIED GASES AND DISSOLVED GASES (cont'd)												
1063	METHYL CHLORIDE (REFRIGERANT GAS R 40)	2.1			X	X	X	X	X	10	17	0.81	a
1064	METHYL MERCAPTAN	2.3	2.1	1350	X	X	X	X	X	5	10	0.78	d, o
1067	DINITROGEN TETROXIDE (NITROGEN DIOXIDE)	2.3	5.1 8	115	X		X			5	10	1.30	k
1069	NITROSYL CHLORIDE	2.3	8	35	X		X			5	13	1.10	k
1070	NITROUS OXIDE	2.2	5.1		X	X	X	X	X	10	180 225 250	0.68 0.74 0.75	
1075	PETROLEUM GASES, LIQUEFIED	2.1			X	X	X	X	X	10			v, z
1076	PHOSGENE	2.3	8	5	X	X	X			5	20	1.23	k
1077	PROPYLENE	2.1			X	X	X	X	X	10	30	0.43	
1078	REFRIGERANT GAS, N.O.S.	2.2			X	X	X	X	X	10			z
1079	SULPHUR DIOXIDE	2.3	8	2520	X	X	X	X	X	5	14	1.23	
1080	SULPHUR HEXAFLUORIDE	2.2			X	X	X	X	X	10	70 140 160	1.04 1.33 1.37	
1081	TETRAFLUOROETHYLENE, STABILIZED	2.1			X	X	X	X	X	10	200		m, o
1082	TRIFLUOROCHLOROETHYLENE, STABILIZED	2.3	2.1	2000	X	X	X	X	X	5	19	1.13	u
1083	TRIMETHYLAMINE, ANHYDROUS	2.1			X	X	X	X	X	10	10	0.56	b
1085	VINYL BROMIDE, STABILIZED	2.1			X	X	X	X	X	10	10	1.37	a
1086	VINYL CHLORIDE, STABILIZED	2.1			X	X	X	X	X	10	12	0.81	a
1087	VINYL METHYL ETHER, STABILIZED	2.1			X	X	X	X	X	10	10	0.67	
1581	CHLOROPICRIN AND METHYL BROMIDE MIXTURE	2.3		850	X	X	X	X	X	5	10	1.51	a
1582	CHLOROPICRIN AND METHYL CHLORIDE MIXTURE	2.3		*	X	X	X	X	X	5	17	0.81	a
1589	CYANOGEN CHLORIDE, STABILIZED	2.3	8	80	X		X			5	20	1.03	k
1741	BORON TRICHLORIDE	2.3	8	2541	X	X	X	X	X	5	10	1.19	
1749	CHLORINE TRIFLUORIDE	2.3	5.1 8	299	X	X	X	X	X	5	30	1.40	a
1858	HEXAFLUOROPROPYLENE (REFRIGERANT GAS R 1216)	2.2			X	X	X	X	X	10	22	1.11	
1859	SILICON TETRAFLUORIDE	2.3	8	450	X	X	X	X	X	5	200 300	0.74 1.10	
1860	VINYL FLUORIDE, STABILIZED	2.1			X	X	X	X	X	10	250	0.64	a
1911	DIBORANE	2.3	2.1	80	X		X			5	250	0.07	d, k, o

* *This LC_{50} value is under review.*

P200	PACKING INSTRUCTION (cont'd)												P200
TABLE 2: LIQUEFIED GASES AND DISSOLVED GASES (cont'd)													
1912	METHYL CHLORIDE AND METHYLENE CHLORIDE MIXTURE	2.1			X	X	X	X	X	10	17	0.81	a
1952	ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with not more than 9% ethylene oxide	2.2			X	X	X	X	X	10	190 250	0.66 0.75	
1958	1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 114)	2.2			X	X	X	X	X	10	10	1.30	
1959	1,1-DIFLUOROETHYLENE (REFRIGERANT GAS R 1132a)	2.1			X	X	X	X	X	10	250	0.77	
1962	ETHYLENE	2.1			X	X	X	X	X	10	225 300	0.34 0.37	
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S.	2.1			X	X	X	X	X	10			v, z
1967	INSECTICIDE GAS, TOXIC, N.O.S.	2.3			X	X	X	X	X	5			z
1968	INSECTICIDE GAS, N.O.S.	2.2			X	X	X	X	X	10			z
1969	ISOBUTANE	2.1			X	X	X	X	X	10	10	0.49	v
1973	CHLORODIFLUOROMETHANE AND CHLOROPENTAFLUORO-ETHANE MIXTURE with fixed boiling point, with approximately 49% chlorodifluoromethane (REFRIGERANT GAS R 502)	2.2			X	X	X	X	X	10	31	1.05	
1974	CHLORODIFLUOROBROMO-METHANE (REFRIGERANT GAS R 12B1)	2.2			X	X	X	X		10	10	1.61	
1975	NITRIC OXIDE AND DINITROGEN TETROXIDE MIXTURE (NITRIC OXIDE AND NITROGEN DIOXIDE MIXTURE)	2.3	5.1 8	115	X	X	X			5			k, z
1976	OCTAFLUOROCYCLOBUTANE (REFRIGERANT GAS RC 318)	2.2			X	X	X	X	X	10	11	1.34	
1978	PROPANE	2.1			X	X	X	X	X	10	25	0.42	v
1982	TETRAFLUOROMETHANE (REFRIGERANT GAS R 14)	2.2			X	X	X	X	X	10	200 300	0.62 0.94	
1983	1-CHLORO-2,2,2-TRIFLUOROETHANE (REFRIGERANT GAS R 133a)	2.2			X	X	X	X	X	10	10	1.18	
1984	TRIFLUOROMETHANE (REFRIGERANT GAS R 23)	2.2			X	X	X	X	X	10	190 250	0.87 0.95	
2035	1,1,1-TRIFLUOROETHANE (REFRIGERANT GAS R 143a)	2.1			X	X	X	X	X	10	35	0.75	
2036	XENON	2.2			X	X	X	X	X	10	130	1.24	
2044	2,2-DIMETHYLPROPANE	2.1			X	X	X	X	X	10	10	0.53	

P200	PACKING INSTRUCTION (cont'd)												P200
TABLE 2: LIQUEFIED GASES AND DISSOLVED GASES (cont'd)													
2073	AMMONIA SOLUTION, relative density less than 0.880 at 15 °C in water, with more than 35% but not more than 40% ammonia with more than 40% but not more than 50% ammonia	2.2			 X X	 X X	 X X	 X X	 X X	 5 5	 10 12	 0.80 0.77	 b b
2188	ARSINE	2.3	2.1	20	X		X			5	42	1.10	d, k
2189	DICHLOROSILANE	2.3	2.1 8	314	X	X	X	X	X	5	10	0.90	
2191	SULPHURYL FLUORIDE	2.3		3020	X	X	X	X	X	5	50	1.10	u
2192	GERMANE	2.3	2.1	620*	X	X	X	X	X	5	250	1.02	d
2193	HEXAFLUOROETHANE (REFRIGERANT GAS R 116)	2.2			X	X	X	X	X	10	200	1.10	
2194	SELENIUM HEXAFLUORIDE	2.3	8	50	X		X			5	36	1.46	k
2195	TELLURIUM HEXAFLUORIDE	2.3	8	25	X		X			5	20	1.00	k
2196	TUNGSTEN HEXAFLUORIDE	2.3	8	160*	X		X			5	10	2.70	a, k
2197	HYDROGEN IODIDE, ANHYDROUS	2.3	8	2860	X	X	X	X	X	5	23	2.25	a, d
2198	PHOSPHORUS PENTAFLUORIDE	2.3	8	190*	X		X			5	200 300	0.90 1.34	k k
2199	PHOSPHINE	2.3	2.1	20	X		X			5	225 250	0.30 0.45	d, k d, k
2200	PROPADIENE, STABILIZED	2.1			X	X	X	X	X	10	22	0.50	
2202	HYDROGEN SELENIDE, ANHYDROUS	2.3	2.1	2	X		X			5	31	1.60	k
2203	SILANE	2.1			X	X	X	X	X	10	225 250	0.32 0.36	d, q d, q
2204	CARBONYL SULPHIDE	2.3	2.1	1700	X	X	X	X	X	5	26	0.84	u
2417	CARBONYL FLUORIDE	2.3	8	360	X	X	X	X	X	5	200 300	0.47 0.70	
2418	SULPHUR TETRAFLUORIDE	2.3	8	40	X		X			5	30	0.91	k
2419	BROMOTRIFLUOROETHYLENE	2.1			X	X	X	X	X	10	10	1.19	
2420	HEXAFLUOROACETONE	2.3	8	470	X	X	X	X	X	5	22	1.08	
2421	NITROGEN TRIOXIDE	2.3	5.1 8	57*	X		X			5			k
2422	OCTAFLUOROBUT-2-ENE (REFRIGERANT GAS R 1318)	2.2			X	X	X	X	X	10	12	1.34	
2424	OCTAFLUOROPROPANE (REFRIGERANT GAS R 218)	2.2			X	X	X	X	X	10	25	1.09	
2451	NITROGEN TRIFLUORIDE	2.2	5.1		X	X	X	X	X	10	200 300	0.50 0.75	
2452	ETHYLACETYLENE, STABILIZED	2.1			X	X	X	X	X	10	10	0.57	c
2453	ETHYL FLUORIDE (REFRIGERANT GAS R 161)	2.1			X	X	X	X	X	10	30	0.57	

* *This LC_{50} value is under review.*

P200	PACKING INSTRUCTION (cont'd)												P200
TABLE 2: LIQUEFIED GASES AND DISSOLVED GASES (cont'd)													
2454	METHYL FLUORIDE (REFRIGERANT GAS R 41)	2.1			X	X	X	X	X	10	300	0.36	
2455	METHYL NITRITE	2.2											
2517	1-CHLORO-1,1-DIFLUOROETHANE (REFRIGERANT GAS R 142b)	2.1			X	X	X	X	X	10	10	0.99	
2534	METHYLCHLOROSILANE	2.3	2.1 8	600	X	X	X	X	X	5			z
2548	CHLORINE PENTAFLUORIDE	2.3	5.1 8	122	X		X			5	13	1.49	a, k
2599	CHLOROTRIFLUOROMETHANE AND TRIFLUOROMETHANE AZEOTROPIC MIXTURE with approximately 60% chlorotrifluoromethane (REFRIGERANT GAS R 503)	2.2			X	X	X	X	X	10	31 42 100	0.11 0.20 0.66	
2601	CYCLOBUTANE	2.1			X	X	X	X	X	10	10	0.63	
2602	DICHLORODIFLUORO-METHANE AND DIFLUOROETHANE AZEOTROPIC MIXTURE with approximately 74% dichlorodifluoromethane (REFRIGERANT GAS R 500)	2.2			X	X	X	X	X	10	22	1.01	
2676	STIBINE	2.3	2.1	20	X		X			5	20	1.20	k
2901	BROMINE CHLORIDE	2.3	5.1 8	290	X	X	X	X	X	5	10	1.50	a
3057	TRIFLUOROACETYL CHLORIDE	2.3	8	10*	X	X	X			5	17	1.17	k
3070	ETHYLENE OXIDE AND DICHLORODIFLUORO-METHANE MIXTURE with not more than 12,5% ethylene oxide	2.2			X	X	X	X	X	10	18	1.09	
3083	PERCHLORYL FLUORIDE	2.3	5.1	770	X	X	X	X	X	5	33	1.21	k, u
3153	PERFLUORO(METHYL VINYL ETHER)	2.1			X	X	X	X	X	10	20	0.75	
3154	PERFLUORO(ETHYL VINYL ETHER)	2.1			X	X	X	X	X	10	10	0.98	
3157	LIQUEFIED GAS, OXIDIZING, N.O.S.	2.2	5.1		X	X	X	X	X	10			z
3159	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)	2.2			X	X	X	X	X	10	22	1.04	
3160	LIQUEFIED GAS, TOXIC, FLAMMABLE, N.O.S.	2.3	2.1		X	X	X	X	X	5			z
3161	LIQUEFIED GAS, FLAMMABLE, N.O.S.	2.1			X	X	X	X	X	10			z
3162	LIQUEFIED GAS, TOXIC, N.O.S.	2.3			X	X	X	X	X	5			z
3163	LIQUEFIED GAS, N.O.S.	2.2			X	X	X	X	X	10			z

* *This LC_{50} value is under review.*

P200	PACKING INSTRUCTION (cont'd)												P200
TABLE 2: LIQUEFIED GASES AND DISSOLVED GASES (cont'd)													
3220	PENTAFLUOROETHANE (REFRIGERANT GAS R 125)	2.2			X	X	X	X	X	10	49 36	0.95 0.72	
3252	DIFLUOROMETHANE (REFRIGERANT GAS R 32)	2.1			X	X	X	X	X	10	48	0.78	
3296	HEPTAFLUOROPROPANE (REFRIGERANT GAS R 227)	2.2			X	X	X	X	X	10	15	1.20	
3297	ETHYLENE OXIDE AND CHLOROTETRAFLUORO-ETHANE MIXTURE with not more than 8.8% ethylene oxide	2.2			X	X	X	X	X	10	10	1.16	
3298	ETHYLENE OXIDE AND PENTAFLUOROETHANE MIXTURE with not more than 7.9% ethylene oxide	2.2			X	X	X	X	X	10	26	1.02	
3299	ETHYLENE OXIDE AND TETRAFLUOROETHANE MIXTURE with not more than 5.6% ethylene oxide	2.2			X	X	X	X	X	10	17	1.03	
3300	ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE with more than 87% ethylene oxide	2.3	2.1	More than 2900	X	X	X	X	X	5	28	0.73	
3307	LIQUEFIED GAS, TOXIC, OXIDIZING, N.O.S.	2.3	5.1		X	X	X	X	X	5			z
3308	LIQUEFIED GAS, TOXIC, CORROSIVE, N.O.S.	2.3	8		X	X	X	X	X	5			z
3309	LIQUEFIED GAS, TOXIC, FLAMMABLE, CORROSIVE, N.O.S.	2.3	2.1 8		X	X	X	X	X	5			z
3310	LIQUEFIED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.	2.3	5.1 8		X	X	X	X	X	5			z
3318	AMMONIA SOLUTION, relative density less than 0.880 at 15 °C in water, with more than 50% ammonia	2.3	8		X	X	X	X		5			b
3337	REFRIGERANT GAS R 404A	2.2			X	X	X	X	X	10	36	0.82	
3338	REFRIGERANT GAS R 407A	2.2			X	X	X	X	X	10	36	0.94	
3339	REFRIGERANT GAS R 407B	2.2			X	X	X	X	X	10	38	0.93	
3340	REFRIGERANT GAS R 407C	2.2			X	X	X	X	X	10	35	0.95	
3354	INSECTICIDE GAS, FLAMMABLE, N.O.S	2.1			X	X	X	X	X	10			z
3355	INSECTICIDE GAS, TOXIC, FLAMMABLE, N.O.S.	2.3	2.1		X	X	X	X	X	5			z
3374	ACETYLENE, SOLVENT FREE	2.1			X		X			5	60 52		c, p

P200	PACKING INSTRUCTION (cont'd)	P200

Table 3: SUBSTANCES NOT IN CLASS 2

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m³	Cylinders	Pressure drums	Bundles of cylinders	Tubes	MEGCs	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
1051	HYDROGEN CYANIDE, STABILIZED containing less than 3% water	6.1	3	140	X		X			5	100	0.55	k
1052	HYDROGEN FLUORIDE, ANHYDROUS	8	6.1	966*	X	X	X			5	10	0.84	
1745	BROMINE PENTAFLUORIDE	5.1	6.1 8	25*	X		X			5	10	**	k
1746	BROMINE TRIFLUORIDE	5.1	6.1 8	180	X		X			5	10	**	k
2495	IODINE PENTAFLUORIDE	5.1	6.1 8	120	X		X			5	10	**	k
2983	ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE, not more than 30% ethylene oxide	3	6.1		X	X	X			5	10		z

P201: The following text becomes new (2):

"(2) In addition, the following packagings are authorized provided that the general provisions of **4.1.1** and **4.1.3** are met."

Rename the existing (2) and (3) as (a) and (b) respectively.

P202: Amend the first sentence to read: "The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met."

P203: Add a new packing instruction to read as follows:

P203	PACKING INSTRUCTION	P203
Cryogenic receptacles conforming to the construction, testing and filling requirements approved by the competent authority are authorized.		

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* *This LC_{50} value is under review.*

** *A minimum ullage of 8% by volume is required.*

P400(1), P401(1) and
P402(1): In the first sentence, replace "Steel gas cylinders and gas receptacles" with "Steel cylinders, pressure drums and tubes" and "conforming to the construction, testing and filling requirements approved by the competent authority." with " conforming to the provisions of packing instruction P200.".

In the second sentence, replace "or the gas cylinders or receptacles" with "or the cylinders, pressure drums or tubes"

In the third sentence, replace "Cylinders and gas receptacles" with "Cylinders, pressure drums and tubes" and delete "of the cylinder".

In the forth sentence, amend the end to read: "of the capacity of the cylinder, pressure drum or tube.".

P401(3) Delete.

P406: Amend the special provision PP24 to read as follows:

"UN Nos. 2852, 3364, 3365, 3366, 3367, 3368 and 3369 shall not be transported in quantities of more than 500 g per package.".

Add the following new special provisions PP78 and PP80 to read as follows:

"PP78 UN 3370 shall not be transported in quantities of more than 11.5 kg per package.";

"PP80 For UN Nos. 2907 and 3344, packagings shall meet the packing group II performance level. Packagings meeting the test criteria of packing group I shall not be used.".

P601: Under (3) "Combination packagings", add the following text after (e).

"(f) The outer and inner packagings shall be subjected periodically to a leakproofness test according to (b) at intervals of not more than two and a half years; and

(g) The outer and inner packagings shall bear in clearly legible and durable characters :

(i) the date (month, year) of the initial testing and the latest periodical test;

(ii) the name or authorized symbol of the party performing the tests and inspections.".

P601 and
P602: Add at the end of the first sentence, after "and **4.1.3** are met": "and the packagings are hermetically sealed:".

Amend P601(4) and P602(4) as follows:

"(4) Cylinders, pressure drums and tubes with a minimum.... No cylinder, pressure drum or tube may be... Cylinders, pressure drums and tubes shall have...".

P621: Amend the first sentence to read: "The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** and the special provisions of **4.1.8** are met."

P650: Insert the following new packing instruction:

P650	**PACKING INSTRUCTION**	**P650**

This packing instruction applies to UN 3373.

General provisions

Diagnostic specimens shall be packed in good quality packagings, which shall be strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between transport units and between transport units and warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings shall be constructed and closed so as to prevent any loss of contents when prepared for transport which might be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure.

Primary receptacles shall be packed in secondary packagings in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings shall be secured in outer packagings with suitable cushioning material. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material or of the outer packaging.

For transport each package shall be clearly and durably marked with the words "DIAGNOSTIC SPECIMENS".

The completed package shall be capable of successfully passing the drop test in 6.3.2.5 as specified in 6.3.2.3 and 6.3.2.4 except that the height of the drop shall not be less than 1.2 m.

For liquids

The primary receptacle(s) shall be leakproof and shall not contain more than 500 ml.

There shall be absorbent material placed between the primary receptacle and the secondary packaging; if several fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated so as to prevent contact between them. The absorbent material, such as cotton wool, shall be in sufficient quantity to absorb the entire contents of the primary receptacles and there shall be a secondary packaging which shall be leakproof.

The primary receptacle or the secondary packaging shall be capable of withstanding without leakage an internal pressure producing a pressure differential of not less than 95 kPa (0.95 bar).

The outer packaging shall not contain more than 4 litres.

P650	PACKING INSTRUCTION (cont'd)	P650
For solids		
The primary receptacle(s) shall be siftproof and shall not contain more than 500 g.		
If several fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated so as to prevent contact between them and there shall be a secondary packaging which shall be leakproof.		
The outer packaging shall not contain more than 4 kg.		
Provided that diagnostic specimens are packed in accordance with this packing instruction, no other requirements of these Model Regulations shall apply.		

P802: Add a new special packing provision to read as follows:

"PP79 For UN 1790 with not more than 85% hydrofluoric acid, see P001.".

In P802(5): replace "conforming to the construction, testing and filling requirements approved by the competent authority" with "conforming to the provisions of packing instruction P200" and "Gas cylinders" with "Cylinders, pressure drums and tubes".

P902: Amend packing instruction **P902** to read as follows:

P902	PACKING INSTRUCTION	P902
This instruction applies to UN 3268.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met:		
Packagings conforming to the packing group III performance level. The packagings shall be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of transport.		
The articles may also be transported unpackaged in dedicated handling devices, vehicles, containers or wagons when moved from where they are manufactured to an assembly plant.		
Additional requirement:		
Any pressure vessel shall be in accordance with the requirements of the competent authority for the substance(s) contained in the pressure vessel(s).		

P904: Amend (1) to read:

"(1) Packagings according to P001 or P002 conforming to the packing group III performance level".

P907: Insert the following new packing instruction to read:

P907	PACKING INSTRUCTION	P907

If the machinery or apparatus is constructed and designed so that the receptacles containing the dangerous goods are afforded adequate protection, an outer packaging is not required. Dangerous goods in machinery or apparatus shall otherwise be packed in outer packagings constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use, and meeting the applicable requirements of **4.1.1.1.**

Receptacles containing dangerous goods shall conform to the general provisions in 4.1.1, except that 4.1.1.3, 4.1.1.4, 4.1.1.12 and 4.1.1.14 do not apply. For Division 2.2 gases, the inner cylinder or receptacle, its contents and filling density shall be to the satisfaction of the competent authority of the country in which the cylinder or receptacle is filled.

In addition, the manner in which receptacles are contained within the machinery or apparatus, shall be such that under normal conditions of transport, damage to receptacles containing the dangerous goods is unlikely; and in the event of damage to receptacles containing solid or liquid dangerous goods, no leakage of the dangerous goods from the machinery or apparatus is possible (a leakproof liner may be used to satisfy this requirement). Receptacles containing dangerous goods shall be so installed, secured or cushioned as to prevent their breakage or leakage and so as to control their movement within the machinery or apparatus during normal conditions of transport. Cushioning material shall not react dangerously with the content of the receptacles. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material.

4.1.4.2 Amend IBC special packing provisions **B3** and **B4** to read as follows:

"B3 Flexible IBCs shall be sift-proof and water resistant or shall be fitted with a sift-proof and water resistant liner.";

"B4 Flexible, fibreboard or wooden IBCs shall be sift-proof and water resistant or shall be fitted with a sift-proof and water resistant liner.".

IBC03: Amend the existing additional requirement to read:

"Only liquids with a vapour pressure less than or equal to 110kPa at 50 °C, or 130 kPa at 55 °C are authorized, other than UN 2672 (see B11).".

Add a new special provision B11 to read as follows:

"B11: UN 2672 Ammonia solution in concentrations not exceeding 25% may be transported in rigid or composite plastics IBCs (31H1, 31H2 and 31HZ1).".

IBC06: Add a new special provision B12 to read as follows:

"B12 For UN 2907, IBCs shall meet the packing group II performance level. IBCs meeting the test criteria of packing group I shall not be used.".

Under "(3) Composite" delete "31HZ2".

IBC620: Amend the first sentence to read: "The following IBCs are authorized, provided that the general provisions of **4.1.1, 4.1.2** and **4.1.3** and the special provisions of **4.1.8** are met."

4.1.4.3 Add a new packing instruction LP902 to read:

LP902	**PACKING INSTRUCTION**	**LP902**
This instruction applies to UN 3268.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Packagings conforming to the packing group III performance level. The packagings shall be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of transport. The articles may also be transported unpackaged in dedicated handling devices, vehicles, containers or wagons when moved from where they are manufactured to an assembly plant.		
Additional requirement: Any pressure vessel shall be in accordance with the requirements of the competent authority for the substance(s) contained in the pressure vessel(s).		

4.1.6 Add a new section to read:

"**4.1.6 Special packing provisions for dangerous goods of Class 2**

4.1.6.1 ***General requirements***

4.1.6.1.1 This section provides general requirements applicable to the use of pressure receptacles for the transport of Class 2 gases and other dangerous goods in pressure receptacles (e.g. UN 1051 Hydrogen cyanide, stabilized). Pressure receptacles shall be constructed and closed so as to prevent any loss of contents which might be caused under normal conditions of transport, including by vibration, or by changes in temperature, humidity or pressure (resulting from change in altitude, for example).

4.1.6.1.2 Parts of pressure receptacles which are in direct contact with dangerous goods shall not be affected or weakened by those dangerous goods and shall not cause a dangerous effect (e.g. catalysing a reaction or reacting with the dangerous goods). The provisions of ISO 11114-1:1997 and ISO 11114-2:2000 shall be met as applicable. Pressure receptacles for UN 1001 acetylene, dissolved, and UN 3374 acetylene, solvent free, shall be filled with a porous material, uniformly distributed, of a type that conforms to the requirements and testing specified by the competent authority and which:

(a) is compatible with the pressure receptacle and does not form harmful or dangerous compounds either with the acetylene or with the solvent in the case of UN 1001; and

(b) is capable of preventing the spread of decomposition of the acetylene in the mass.

In the case of UN 1001, the solvent shall be compatible with the pressure receptacles.

4.1.6.1.3 Pressure receptacles, including their closures, shall be selected to contain a gas or a mixture of gases according to the requirements of 6.2.1.2 and the requirements of the specific packing instructions of 4.1.4.1. This section also applies to pressure receptacles which are elements of MEGCs.

4.1.6.1.4 Refillable pressure receptacles shall not be filled with a gas or gas mixture different from that previously contained unless the necessary operations for change of gas service have been performed in accordance with ISO 11621:1997. In addition, a pressure receptacle that previously contained a Class 8 corrosive substance or a substance of another class with a corrosive subsidiary risk shall not be authorized for the transport of a Class 2 substance unless the necessary inspection and testing as specified in 6.2.1.5 have been performed.

Prior to filling, the filler shall perform an inspection of the pressure receptacle and ensure that the pressure receptacle is authorized for the gas to be transported and that the provisions of these Model Regulations have been met. Valves shall be closed after filling and remain closed during transport. The consignor shall verify that the closures and equipment are not leaking.

4.1.6.1.5 Pressure receptacles shall be filled according to the working pressures, filling ratios and provisions specified in the appropriate packing instruction for the specific substance being filled. Reactive gases and gas mixtures shall be filled to a pressure such that if complete decomposition of the gas occurs, the working pressure of the pressure receptacle shall not be exceeded. Bundles of cylinders shall not be filled in excess of the lowest working pressure of any given cylinder in the bundle.

4.1.6.1.6 Pressure receptacles, including their closures, shall conform to the design, construction, inspection and testing requirements detailed in Chapter 6.2. When outer packagings are prescribed, the pressure receptacles shall be firmly secured therein. Unless otherwise specified in the detailed packing instructions, one or more inner packagings may be enclosed in an outer packaging.

4.1.6.1.7 Valves shall be protected from damage which could cause inadvertent release of the contents of the pressure receptacle, by one of the following methods:

(a) Valves are placed inside the neck of the pressure receptacle and protected by a threaded plug or cap;

(b) Valves are protected by caps. Caps shall possess vent-holes of sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;

(c) Valves are protected by shrouds or guards;

(d) Valves are designed and constructed in such a way that they are inherently able to withstand damage without leakage of product;

(e) Pressure receptacles are transported in frames, (e.g. bundles); or

(f) Pressure receptacles are transported in an outer packaging. The packaging as prepared for transport shall be capable of meeting the drop test specified in 6.1.5.3 at the packing group I performance level.

For pressure receptacles with valves as described in (b) and (c), the requirements of ISO11117:1998 shall be met; for unprotected valves as described in (d), the requirements of annex B of ISO 10297:1999 shall be met.

4.1.6.1.8 Non-refillable pressure receptacles shall:

(a) be transported in an outer packaging, such as a box, or crate, or in shrink-wrapped trays or stretch- wrapped trays;

(b) be of a water capacity less than or equal to 1.25 litres when filled with flammable or toxic gas;

(c) not be used for toxic gases with an LC_{50} less than or equal to 200 ml/m^3; and

(d) not be repaired after being put into service.

4.1.6.1.9 Refillable pressure receptacles shall be periodically inspected according to the provisions of packing instructions P200 or P203 as applicable. Pressure receptacles shall not be charged or filled after they become due for periodic inspection but may be transported after the expiry of the time limit.

4.1.6.1.10 Repairs are only permitted as indicated in the periodic inspection standards specified in 6.2.2.4, consistent with the applicable design and construction standards. Pressure receptacles shall not be subjected to repairs of any of the following:

(a) weld cracks or other weld defects;

(b) cracks in walls;

(c) leaks or defects in the material of the wall, head or bottom.

4.1.6.1.11 Pressure receptacles shall not be offered for filling:

(a) when damaged to such an extent that the integrity of the pressure receptacle or its service equipment may be affected;

(b) unless the pressure receptacle and its service equipment has been examined and found to be in good working order; and

(c) unless the required certification, retest, and filling markings are legible.

4.1.6.1.12 Charged pressure receptacles shall not be offered for transport:

(a) when leaking;

(b) when damaged to such an extent that the integrity of the pressure receptacle or its service equipment may be affected;

(c) unless the pressure receptacle and its service equipment has been examined and found to be in good working order; and

(d) unless the required certification, retest, and filling markings are legible.".

4.1.7.0.1 Add a new paragraph to read:

"4.1.7.0.1 For organic peroxides, all receptacles shall be "effectively closed". Where significant internal pressure may develop in a package by the evolution of a gas, a vent may be fitted, provided the gas emitted will not cause danger, otherwise the degree of filling shall be limited. Any venting device shall be so constructed that liquid will not escape when the package is in an upright position and it shall be able to prevent ingress of impurities. The outer packaging, if any, shall be so designed as not to interfere with the operation of the venting device.".

4.1.7.2.3 and 4.1.7.2.4 Add the following new paragraphs:

"4.1.7.2.3 For self-reactive substances temperature control is required according to 2.4.2.3.4. For organic peroxides temperature control is required according to 2.5.3.4.1. Temperature control provisions are given in 7.1.4.3.1.

4.1.7.2.4 Emergencies to be taken into account are self-accelerating decomposition and fire engulfment. To prevent explosive rupture of metal IBCs with a complete metal casing, the emergency-relief devices shall be designed to vent all the decomposition products and vapours evolved during self-accelerating decomposition or during a period of not less than one hour of complete fire engulfment calculated by the equations given in 4.2.1.13.8.".

4.1.8.2 Amend to read as follows:

"The definitions in 1.2.1 and the general packing provisions of 4.1.1.1 to 4.1.1.14, except 4.1.1.10 to 4.1.1.12 apply to infectious substances packages. However, liquids shall be filled into packagings, including IBCs, which have an appropriate resistance to the internal pressure that may develop under normal conditions of transport."

4.1.8.3 Amend the beginning to read: "For UN 2814 and UN 2900, an itemized...".

4.1.8.5 Add a new paragraph to read: "The provisions of this section do not apply to UN 3373 Diagnostic specimens (see packing instruction P650)".

Chapter 4.2

4.2 Add, in the title: "**AND MULTIPLE-ELEMENT GAS CONTAINERS (MEGCs)**"

4.2.1.4 Replace "dangerous goods" with "substances".

4.2.1.9 Amend the title to read "Degree of filling".

4.2.1.9.1, 4.2.2.7.1 and 4.2.3.6.1 Replace "weaken the material" with "weaken these materials".

4.2.1.9.1.1 Amend the end of the sentence to read as follows:

"... in the applicable portable tank instructions or special provisions in 4.2.4.2.6 or 4.2.4.3 and Columns 10 or 11 of the Dangerous Goods List.".

4.2.1.9.6 (b) Replace "goods" with "substances".

4.2.1.13.1 In the last sentence, replace "special requirement" with "additional provision".

4.2.1.13.2 and 4.2.1.13.3 Replace "requirements" with " provisions" (3 times).

4.2.1.13.6 Replace "the properties of the substance peroxide" with "the properties of the substance".

4.2.1.13.8 In the text under the first formula delete "[-]", amend " T_{PO}" to read "T" (in the second formula), replace "vessels "with "shells" (twice) and amend:

"T_{PO} = temperature of peroxide at relieving conditions" to read
"T = temperature of substance at relieving conditions"

In the last sentence, add "portable" before "tank".

4.2.2.5 and 4.2.3.4 Replace "dangerous goods" with "gas(es)".

4.2.3.2 Amend the end of the sentence to read as follows:

"... assigned to each substance in Column 11 of the Dangerous Goods List and described in 4.2.4.3.".

4.2.3.7 Renumber the paragraph under the title as "4.2.3.7.1" and the following one (now 4.2.3.7.1) as "4.2.3.7.2".

4.2.3.9 Delete ", as appropriate,".

4.2.4 Renumber the existing 4.2.4 as 4.2.5 and add the following text as a new 4.2.4:

"**4.2.4 General provisions for the use of multiple-element gas containers (MEGCs)**

4.2.4.1 This section provides general requirements applicable to the use of multiple-element gas containers (MEGCs) for the transport of non-refrigerated gases.

4.2.4.2 MEGCs shall conform to the design, construction, inspection and testing requirements detailed in 6.7.5. The elements of MEGCs shall be periodically inspected according to the provisions set out in packing instruction P200 and in 6.2.1.5.

4.2.4.3 During transport, MEGCs shall be protected against damage to the elements and service equipment resulting from lateral and longitudinal impact and overturning. If the elements and service equipment are so constructed as to withstand impact or overturning, they need not be protected in this way. Examples of such protection are given in 6.7.5.10.4.

4.2.4.4 The periodic testing and inspection requirements for MEGCs are specified in 6.7.5.12. MEGCs or their elements shall not be charged or filled after they become due for periodic inspection but may be transported after the expiry of the time limit.

4.2.4.5 *Filling*

4.2.4.5.1 Prior to filling, the MEGC shall be inspected to ensure that it is authorized for the gas to be transported and that the applicable provisions of these Model Regulations have been met.

4.2.4.5.2 Elements of MEGCs shall be filled according to the working pressures, filling ratios and filling provisions specified in packing instruction P200 for the specific gas being filled into each element. In no case shall a MEGC or group of elements be filled as a unit in excess of the lowest working pressure of any given element.

4.2.4.5.3 MEGCs shall not be filled above their maximum permissible gross mass.

4.2.4.5.4 Isolation valves shall be closed after filling and remain closed during transport. Toxic gases of Division 2.3 shall only be transported in multiple-element gas containers where each element is equipped with an isolation valve.

4.2.4.5.5 The opening(s) for filling shall be closed by caps or plugs. The leakproofness of the closures and equipment shall be verified by the shipper after filling.

4.2.4.5.6 MEGCs shall not be offered for filling:

(a) when damaged to such an extent that the integrity of the pressure receptacles or its structural or service equipment may be affected;

(b) unless the pressure receptacles and its structural and service equipment has been examined and found to be in good working order; and

(c) unless the required certification, retest, and filling markings are legible.

4.2.4.6 Charged MEGCs shall not be offered for transport:

(a) when leaking;

(b) when damaged to such an extent that the integrity of the pressure receptacles or its structural or service equipment may be affected;

(c) unless the pressure receptacles and its structural and service equipment has been examined and found to be in good working order; and

(d) unless the required certification, retest, and filling markings are legible.

4.2.4.7 Empty MEGCs that have not been cleaned and purged shall comply with the same requirements as MEGCs filled with the previous substance.".

4.2.5.2.1 (Former 4.2.4.2.1) Replace "requirements" with "provisions" (3 times) and amend the end of the paragraph to read "... to the general provisions of this Chapter and the general requirements of Chapter 6.7.".

4.2.5.2.5 (Former 4.2.4.2.5) In the text before the table, replace "wall thicknesses" with "shell thicknesses".

In the table, for portable tank instruction T5, under "Portable tank instructions also permitted", delete "T12", "T16" and "T18".

4.2.5.2.6 (Former 4.2.4.2.6) In the table of portable tank instruction **T23**:

Amend the title of the 7th column to read "Degree of filling" and footnote **/ (page 368 of the English version) to read: "Maximum quantity per portable tank: 2000 kg";
Add the following entry under UN 3119:

UN No	Substance	Minimum test pressure (bar)	Minimum shell thickness (mm-reference steel)	Bottom opening requirements	Pressure relief requirements	Degree of filling	Contr. temp.	Emerg temp.
	Peroxyacetic acid, distilled, type F, stabilized **/						+ 30 °C	+ 35 °C

Add a new footnote (page 369 of the English version) to read as follows:

"***/ *Formulation derived from distillation of peroxyacetic acid originating from peroxyacetic acid in concentration of not more than 41% with water, total active oxygen (peroxyacetic acid + H_2O_2) ≤ 9.5%, which fulfils the criteria of 2.5.3.3.2 (f)*".

In the table of portable tank instruction T50 amend the title of the 6th column to read "Maximum filling density" and change:

The values of maximum filling density for:

UN 3337	(R404 A)	from	0.82 kg/l	to	0.84 kg/l
UN 3338	(R407 A)	from	0.94 kg/l	to	0.95 kg/l
UN 3339	(R407 B)	from	0.93 kg/l	to	0.95 kg/l

The values of maximum allowable working pressure for:

UN 3337 (R404 A)	Small		none		none
	Bare	from	28.2 bar	to	28.3 bar
	Sunshield	from	25.2 bar	to	25.3 bar
	Insulated	from	22.1 bar	to	22.5 bar
UN 3338 (R407 A)	Small	from	32.3 bar	to	31.3 bar
	Bare	from	29.0 bar	to	28.1 bar
	Sunshield	from	25.7 bar	to	25.1 bar
	Insulated		none		none
UN 3339 (R407 B)	Small	from	34.0 bar	to	33.0 bar
	Bare	from	30.5 bar	to	29.6 bar
	Sunshield	from	27.0 bar	to	26.5 bar
	Insulated		none		none
UN 3340 (R407 C)	Small	from	30.2 bar	to	29.9 bar
	Bare	from	27.0 bar	to	26.8 bar
	Sunshield	from	24.1 bar	to	23.9 bar
	Insulated	from	21.4 bar	to	21.3 bar

4.2.5.3 (Former 4.2.4.3) Replace "to indicate requirements" with "to indicate provisions" and "designated using the abbreviation TP" with "identified by an alpha numeric designation beginning with the letters "TP".

Amend TP1, TP2, and TP3 to read "the degree of filling prescribed in ... shall not be exceeded ..."

TP4: delete "for portable tanks".

TP12: amend to read: "This substance is highly corrosive to steel".

TP19 (twice) and TP 21: replace "wall thickness" with "shell thickness".

Add two new portable tank special provisions "TP30" and "TP31" to read as follows:

"TP30 This substance shall be transported in insulated tanks."
"TP31 This substance may only be transported in tanks in the solid state.".

PART 5

Chapter 5.2

5.2.1.1 Replace "shown" with "marked".

5.2.1.5.1 Doesn't apply to the English version.

5.2.2.1.3.1 Insert the words "Packages containing" before "Substances" (twice).

5.2.2.1.9 Insert a new paragraph to read:

"5.2.2.1.9 *Special provisions for the labelling of self-reactive substances.*

An "EXPLOSIVE" subsidiary risk label (Model No.1) shall be applied for type B self-reactive substances, unless the competent authority has permitted this label to be dispensed with for a specific packaging because test data have proved that the self-reactive substance in such a packaging does not exhibit explosive behaviour.".

Renumber existing paragraphs .2.2.1.9 to 5.2.2.1.11.4 accordingly.

5.2.2.2.1.2 Amend the beginning to read: "Cylinders for Class 2..." and replace ",as appropriate," with "according to ISO 7225:1994,"

5.2.2.2.1.6 Add the following paragraph:

"(c) The Division 2.1 label displayed on cylinders and gas cartridges for liquefied petroleum gases, where they may be shown in the background colour of the receptacle if adequate contrast is provided.".

5.2.2.2.2 Amend 5.2.2.2.2 to read as follows:

"(No 2.1)
Division 2.1
Flammable gases
Symbol (flame): black or white (except as provided for in 5.2.2.2.1.6 (c))
Background: red, Figure "2" in bottom corner".

Chapter 5.3

5.3.2.1.1 (a) Add the following text before the semicolon: "including on each compartment of a multicompartment tank transport unit"

5.3.2.1.2 (a) and (b) Delete "the" and insert "each" before the word "placard" (twice).

Chapter 5.4

Replace the existing text with the following one:

"**DOCUMENTATION**

Introductory note

NOTE: These Regulations do not preclude the use of electronic data processing (EDP) and electronic data interchange (EDI) transmission techniques as an aid to paper documentation.

5.4.1 Dangerous goods transport documentation

5.4.1.1 *General*

Except as otherwise provided, the consignor who offers dangerous goods for transport shall describe the dangerous goods on a transport document and provide additional information and documentation as specified in these Regulations.

5.4.1.2 ***Form of the transport document***

5.4.1.2.1 A dangerous goods transport document may be in any form, provided it contains all of the information required by these Regulations.

5.4.1.2.2 If both dangerous and non-dangerous goods are listed in one document, the dangerous goods shall be listed first, or otherwise be emphasized.

5.4.1.2.3 *Continuation page*

A dangerous goods transport document may consist of more than one page, provided pages are consecutively numbered.

5.4.1.2.4 The information on a dangerous goods transport document shall be easy to identify, legible and durable.

5.4.1.2.5 *Example of a dangerous goods transport document*

The form shown in figure 5.4.1 is an example of a dangerous goods transport document[1].

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[1] *For standardized formats, see also the relevant recommendations of the UN/ECE Working Party on Facilitation of International Trade Procedures, in particular Recommendation No.1 (United Nations Lay-out Key for Trade Documents) (ECE/TRADE/137, edition 96.1), Recommendation No. 11 (Documentary Aspects of the International Transport of Dangerous Goods) (ECE/TRADE/204, edition 96.1) and Recommendation No. 22 (Lay-out Key for standard Consignment Instructions) (ECE/TRADE/168, edition 96.1). Refer to the Trade Data Elements Directory, Volume III, Trade Facilitation Recommendations (ECE/TRADE/200)(United Nations publication sales No.E.96.II.E.13).*

(Multimodal dangerous goods form on pages 405 and 406 of the Model Regulations to be inserted here as Figure 5.4.1)

5.4.1.3 ***Consignor, consignee and date***

The name and address of the consignor and the consignee of the dangerous goods shall be included on the dangerous goods transport document. The date the dangerous goods transport document or an electronic copy of it was prepared or given to the initial carrier shall be included.

5.4.1.4. ***Information required on the dangerous goods transport document***

5.4.1.4.1 *Dangerous goods description*

The dangerous goods transport document shall contain the following information for each dangerous substance, material or article offered for transport:

(a) The UN number preceded by the letters "UN";

(b) The proper shipping name, as determined according to 3.1.2;

(c) The class or, when assigned, the Division of the goods, including for Class 1, the compatibility group letter. Any assigned subsidiary hazard class or division number(s) shall be entered following the numerical hazard class or Division and shall be enclosed in parenthesis. The words "Class" or "Division" may be included preceding the primary or subsidiary hazard class or Division numbers;

(d) Where assigned, the packing group for the substance or article which may be preceded by "PG" (e.g."PG II").

5.4.1.4.2 *Sequence of the dangerous goods description*

The dangerous goods description specified in 5.4.1.4.1 shall be shown either in sequence (a), (b), (c), (d), or in sequence (b), (c), (a), (d), with no information interspersed, except as provided in these Regulations. Examples of such permitted dangerous goods descriptions are:

"UN 1098 ALLYL ALCOHOL 6.1 (3) I" or
" ALLYL ALCOHOL, 6.1 (3), UN 1098, I"

NOTE: *In addition to the requirements of these Regulations, other elements of information may be required by the competent authority or for certain modes of transport (e.g. flash point for sea transport). Unless permitted or required by these Regulations, additional information shall be placed after the dangerous goods description.*

5.4.1.4.3 *Information which supplements the proper shipping name in the dangerous goods description*

The proper shipping name in the dangerous goods description shall be supplemented as follows:

(a) *Technical names for "n.o.s." and other generic descriptions*: Proper shipping names that are assigned special provision 274 in Column 6 of the Dangerous Goods List shall be supplemented with their technical or chemical group names as described in 3.1.2.8;

(b) *Empty uncleaned packagings and tanks*: Empty means of containment (including packagings, IBCs, portable tanks, tank-vehicles and tank-wagons) which contain the residue of dangerous goods of classes other than Class 7 shall be described as such by, for example, placing the words "**EMPTY UNCLEANED**" or "**RESIDUE LAST CONTAINED**" before or after the proper shipping name;

(c) *Wastes*: For waste dangerous goods (other than radioactive wastes) which are being transported for disposal, or for processing for disposal, the proper shipping name shall be preceded by the word "**WASTE**", unless this is already a part of the proper shipping name;

(d) *Elevated temperature substances*: If the proper shipping name of a substance which is transported or offered for transport in a liquid state at a temperature equal to or exceeding 100 °C, or in a solid state at a temperature equal to or exceeding 240 °C, does not convey the elevated temperature condition (for example, by using the term "**MOLTEN**" or "**ELEVATED TEMPERATURE**" as part of the shipping name), the word "**HOT**" shall immediately precede the proper shipping name.

5.4.1.5 ***Information required in addition to the dangerous goods description***

In addition to the dangerous goods description the following information shall be included after the dangerous goods description on the dangerous goods transport document.

5.4.1.5.1 *Total quantity of dangerous goods*

Except for empty uncleaned packagings, the total quantity of dangerous goods covered by the description (by volume or mass as appropriate) of each item of dangerous goods bearing a different proper shipping name, UN number or packing group shall be included. For Class 1 dangerous goods, the quantity shall be the net explosive mass. For dangerous goods transported in salvage packagings, an estimate of the quantity of dangerous goods shall be given. The number and kind (e.g. drum, box, etc) of packagings shall also be indicated. Abbreviations may be used to specify the unit of measurement for the total quantity.

5.4.1.5.2 *Limited quantities*

When dangerous goods are transported according to the exceptions for dangerous goods packed in limited quantities provided for in Column 7 of the Dangerous Goods List and Chapter 3.4, the words "**limited quantity**" or "**LTD QTY**" shall be included.

5.4.1.5.3 *Salvage packagings*

For dangerous goods transported in salvage packagings, the words "**SALVAGE PACKAGE**" shall be included.

5.4.1.5.4 *Substances stabilized by temperature control*

If the word "STABILIZED" is part of the proper shipping name (see also 3.1.2.6), when stabilization is by means of temperature control, the control and emergency temperatures (see 7.1.4.3.1) shall be indicated in the transport document, as follows:

"**Control temperature: ....°C Emergency temperature**: .... °C".

5.4.1.5.5 *Self-reactive substances and organic peroxides*

For self-reactive substances of Division 4.1 and for organic peroxides which require temperature control during transport, the control and emergency temperatures (see 7.1.4.3.1) shall be indicated on the dangerous goods transport document, as follows:

"**Control temperature: ....° C Emergency temperature: .... °C**".

5.4.1.5.5.1 When for certain self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 the competent authority has permitted the "EXPLOSIVE" subsidiary risk label (model No. 1) to be dispensed with for the specific package, a statement to this effect shall be included.

5.4.1.5.5.2 When organic peroxides and self-reactive substances are transported under conditions where approval is required (for organic peroxides, see 2.5.3.2.5, 4.1.7.2.2, 4.2.1.13.1 and 4.2.1.13.3; for self-reactive substances, see 2.4.2.3.2.4 and 4.1.7.2.2), a statement to this effect shall be included in the dangerous goods transport document. A copy of the classification approval and conditions of transport for non-listed organic peroxides and self-reactive substances shall be attached to the dangerous goods transport document.

5.4.1.5.5.3 When a sample of an organic peroxide (see 2.5.3.2.5.1) or a self-reactive substance (see 2.4.2.3.2.4(b)) is transported, a statement to this effect shall be included in the dangerous goods transport document.

5.4.1.5.6 *Infectious substances*

The full address of the consignee shall be shown on the document, together with the name of a responsible person and his telephone number.

5.4.1.5.7 *Radioactive material*

5.4.1.5.7.1 The following information shall be included for each consignment of Class 7 material, as applicable, in the order given:

(a) The name or symbol of each radionuclide or, for mixtures of radionuclides, an appropriate general description or a list of the most restrictive nuclides;

(b) A description of the physical and chemical form of the material, or a notation that the material is special form radioactive material or low dispersible radioactive material. A generic chemical description is acceptable for chemical form;

(c) The maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with an appropriate SI prefix (see 1.2.2.1). For fissile material, the mass of fissile material in units of grams (g), or appropriate multiples thereof, may be used in place of activity;

(d) The category of the package, i.e. I-WHITE, II-YELLOW, III-YELLOW;

(e) The transport index (categories II-YELLOW and III-YELLOW only);

(f) For consignments including fissile material other than consignments excepted under 6.4.11.2, the criticality safety index;

(g) The identification mark for each competent authority approval certificate (special form radioactive material, low dispersible radioactive material, special arrangement, package design, or shipment) applicable to the consignment;

(h) For consignments of packages in an overpack or freight container, a detailed statement of the contents of each package within the overpack or freight container and, where appropriate, of each overpack or freight container in the consignment. If packages are to be removed from the overpack or freight container at a point of intermediate unloading, appropriate transport documents shall be made available;

(i) Where a consignment is required to be shipped under exclusive use, the statement "EXCLUSIVE USE SHIPMENT"; and

(j) For LSA-II, LSA-III, SCO-I and SCO-II, the total activity of the consignment as a multiple of A_2.

5.4.1.5.7.2 The transport document shall include a statement regarding actions, if any, that are required to be taken by the carrier. The statement shall be in the languages deemed necessary by the carrier or the authorities concerned, and shall include at least the following points:

(a) Supplementary requirements for loading, stowage, transport, handling and unloading of the package, overpack or freight container including any special stowage provisions for the safe dissipation of heat (see 7.1.6.3.2), or a statement that no such requirements are necessary;

(b) Restrictions on the mode of transport or conveyance and any necessary routing instructions;

(c) Emergency arrangements appropriate to the consignment.

5.4.1.5.7.3 The applicable competent authority certificates need not necessarily accompany the consignment. The consignor shall make them available to the carrier(s) before loading and unloading.

5.4.1.6 *Certification*

5.4.1.6.1 The dangerous goods transport document shall include a certification or declaration that the consignment is acceptable for transport and that the goods are properly packaged, marked and labelled, and in proper condition for transport in accordance with the applicable regulations. The text for this certification is:

"I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations."

The certification shall be signed and dated by the consignor. Facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of facsimile signatures.

5.4.1.6.2 If the dangerous goods documentation is presented to the carrier by means of electronic data processing (EDP) or electronic data interchange (EDI) transmission techniques, the signature(s) may be replaced by the name(s) (in capitals) of the person authorized to sign.

5.4.2 Container/vehicle packing certificate

5.4.2.1 When dangerous goods are packed or loaded into any container[2] or vehicle which will be transported by sea, those responsible for packing of the container or vehicle shall provide a "container/vehicle packing certificate" specifying the container/vehicle identification number(s) and certifying that the operation has been carried out in accordance with the following conditions:

(a) The container/vehicle was clean, dry and apparently fit to receive the goods;

(b) Packages, which need to be segregated in accordance with applicable segregation requirements, have not been packed together onto or in the container/vehicle;

(c) All packages have been externally inspected for damage, and only sound packages loaded have been loaded;

(d) All goods have been properly loaded and, where necessary, adequately braced with securing material to suit the mode(s) of transport for the intended journey;

(e) Goods loaded in bulk have been evenly distributed within the container/vehicle;

(f) For consignments including goods of Class 1 other than Division 1.4, the container/vehicle is structurally serviceable in accordance with 7.1.3.2.1;

(g) The container/vehicle and packages are properly marked, labelled and placarded, as appropriate;

(h) When solid carbon dioxide (CO_2-dry ice) is used for cooling purposes, the container/vehicle is externally marked or labelled in a conspicuous place, such as, at the door end, with the words: "DANGEROUS CO_2 (DRY ICE) INSIDE. VENTILATE THOROUGHLY BEFORE ENTERING"; and

(i) A dangerous goods transport document, as indicated in 5.4.1.1, has been received for each dangerous goods consignment loaded in the container/vehicle.

NOTE: *The container/vehicle packing certificate is not required for tanks.*

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[2] *Container means an article of transport equipment that is of a permanent character and accordingly strong enough to be suitable for repeated use; specially designed to facilitate the transport of goods, by one or more modes of transport, without intermediate reloading; designed to be secured and/or readily handled, having fittings for these purposes, and approved in accordance with the International Convention for Safe Containers (CSC), 1972, as amended. The term "container" includes neither vehicle nor packaging. However, a container that is transported on a chassis is included.*

5.4.2.2 The information required in the dangerous goods transport document and the container/vehicle packing certificate may be incorporated into a single document, if not, these documents shall be attached one to the other. If the information is incorporated into a single document, the document shall include a signed declaration such as "It is declared that the packing of the goods into the container/vehicle has been carried out in accordance with the applicable provisions". This declaration shall be dated and the person signing this declaration shall be identified on the document.

5.4.3 Emergency response information

For consignments for which a dangerous goods transport document is required by these Regulations, appropriate information shall be immediately available at all times for use in emergency response to accidents and incidents involving dangerous goods in transport. The information shall be available away from the packages containing the dangerous goods and immediately accessible in the event of an accident or incident. Methods of compliance include:

(a) Appropriate entries in the transport document; or

(b) Provision of a separate document such as a safety data sheet; or

(c) Provision of a separate document, such as the International Civil Aviation Organization (ICAO) "Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods" or the International Maritime Organization (IMO) "Emergency Procedures for Ships Carrying Dangerous Goods" and "Medical First Aid Guide in Accidents Involving Dangerous Goods", for use in conjunction with the transport document."

Chapter 5.5

5.5.2 Amend to read as follows:

"**5.5.2 Documentation and identification of fumigated units**

5.5.2.1 Transport documents associated with the transport of units that have been fumigated shall show the date of fumigation and the type and amount of the fumigant used. In addition, instructions for disposal of any residual fumigant including fumigation devices (if used) shall be provided.

5.5.2.2 A warning sign as specified in 5.5.2.3 shall be placed on each fumigated unit in a location where it will be easily seen by persons attempting to enter the interior of the unit. When the fumigated unit has been ventilated to remove harmful concentrations of fumigant gas, the warning sign shall be removed.

5.5.2.3 The fumigation warning sign shall be rectangular and shall not be less than 300 mm wide and 250 mm high. The markings shall be black print on a white background with lettering not less than 25 mm high. An illustration of this sign is given in Figure 5.5.1.".

PART 6

Chapter 6.1

Delete the introductory notes (Notes 1, 2 and 3).

6.1.1.1 (b) Replace "Gas cylinders" with "Pressure receptacles".

6.1.1.4 Add "reconditioned", after "manufactured" and delete "manufactured" after "each".

6.1.1.5, 6.3.1.3, 6.4.2.12 and 6.6.1.4 Add the following text as new paragraphs 6.1.1.5, 6.3.1.3, 6.4.2.12 and 6.6.1.4:

"Manufacturers and subsequent distributors of packagings shall provide information regarding procedures to be followed and a description of the types and dimensions of closures (including required gaskets) and any other components needed to ensure that packages as presented for transport are capable of passing the applicable performance tests of this Chapter."

6.1.2.3 Delete "and infectious substances packagings marked in accordance with 6.3.1.1.".

6.1.2.5 Delete "7. Pressure receptacle"

6.1.3 Under Note 3, replace three times "Group" with "packing group".

6.1.3.2 Renumber this paragraph as "6.1.3.3" and amend to read as follows:

"6.1.3.3 Every packaging other than those referred to in 6.1.3.2 liable to undergo a reconditioning process shall bear the marks indicated in 6.1.3.1 (a) to (e) in a permanent form. Marks are permanent if they are able to withstand the reconditioning process (e.g. embossed). For packagings other than metal drums of a capacity greater than 100 litres, these permanent marks may replace the corresponding durable markings prescribed in 6.1.3.1.".

6.1.3.2.1, 6.1.3.2.2 and 6.1.3.2.3 Renumber these paragraphs as 6.1.3.2, 6.1.3.4 and 6.1.3.5 respectively.

Renumber the following paragraphs accordingly.

6.1.3.6 (Former 6.1.3.3) Amend this paragraph to read as follows:

"6.1.3.6 Marking shall be applied in the sequence of the sub-paragraphs in 6.1.3.1; each element of the marking required in these sub-paragraphs and when appropriate sub-paragraphs (h) to (j) of 6.1.3.7 shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable. For examples, see 6.1.3.9.

Any additional markings authorized by a competent authority shall still enable the parts of the mark to be correctly identified with reference to 6.1.3.1."

6.1.3.7 (i) (Former 6.1.3.4 (i)) Amend to read as follows:

"(i) the name of the reconditioner or other identification of the packaging specified by the competent authority.".

6.1.4.8.2 Amend the terms "the period of use permitted for the transport of dangerous substances is five years..." to read "the period of use for the transport of dangerous substances shall not exceed five years ..."

6.1.4.18.1 Amend the first sentence to read as follows:

"Bags shall be made of a suitable kraft paper or of an equivalent paper with at least three plies, the middle ply of which may be net-cloth and adhesive bonding to the outer paper plies.".

6.1.5.2.5 Amend last sentence to read as follows:

"The minimum height of the stack including the test sample shall be 3 metres.".

6.1.5.5.4 Replace "substance" with "liquid" (three times).

6.1.5.5.5 Replace "substances" with "liquids".

6.1.5.6.2 Delete "non-dangerous" after "are" in the first sentence.

Chapter 6.2

Amend to read as follows:

"CHAPTER 6.2

REQUIREMENTS FOR THE CONSTRUCTION AND TESTING OF PRESSURE RECEPTACLES, AEROSOL DISPENSERS AND SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES)

6.2.1 General requirements

NOTE: For aerosol dispensers and small receptacles containing gas (gas cartridges) see 6.2.4.

6.2.1.1 *Design and construction*

6.2.1.1.1 Pressure receptacles and their closures shall be designed, manufactured, tested and equipped in such a way as to withstand all conditions to which they will be subjected during normal conditions of transport.

6.2.1.1.2 In recognition of scientific and technological advances, and recognizing that pressure receptacles other than those that are marked with a UN certification marking may be used on a national or regional basis, pressure receptacles conforming to

requirements other than those specified in these Model Regulations may be used if approved by the competent authorities in the countries of transport and use.

6.2.1.1.3 Any additional thickness used for the purpose of providing a corrosion allowance shall not be taken into consideration in calculating the thickness of the walls. In no case shall the minimum wall thickness be less than that specified in the design and construction technical standards.

6.2.1.1.4 For welded pressure receptacles, only metals of weldable quality shall be used.

6.2.1.1.5 The following requirements apply to the construction of closed cryogenic pressure receptacles for refrigerated liquefied gases:

(a) The mechanical properties of the metal used shall be established for each pressure receptacle at the initial inspection, including the impact strength and the bending coefficient;

(b) The pressure receptacles shall be thermally insulated. The thermal insulation shall be protected against impact by means of continuous sheathing. If the space between the pressure receptacle and the sheathing is evacuated of air (vacuum-insulation), the protective sheathing shall be designed to withstand without permanent deformation an external pressure of at least 100 kPa (1 bar). If the sheathing is so closed as to be gas-tight (e.g. in the case of vacuum-insulation), a device shall be provided to prevent any dangerous pressure from developing in the insulating layer in the event of inadequate gas-tightness of the pressure receptacle or its fittings. The device shall prevent moisture from penetrating into the insulation.

6.2.1.1.6 The test pressure of cylinders, tubes, pressure drums and bundles of cylinders shall be in accordance with packing instruction P200. The test pressure for closed cryogenic receptacles shall be in accordance with packing instruction P203.

6.2.1.1.7 Pressure receptacles assembled in bundles shall be structurally supported and held together as a unit. Pressure receptacles shall be secured in a manner that prevents movement in relation to the structural assembly and movement that would result in the concentration of harmful local stresses. Manifolds shall be designed such that they are protected from impact. For Division 2.3 liquefied gases, means shall be provided to ensure that each pressure receptacle can be separately charged and that no interchange of pressure receptacle contents can occur during transport.

6.2.1.2 ***Materials***

6.2.1.2.1 Construction materials of pressure receptacles and their closures which are in direct contact with dangerous goods shall not be affected or weakened by the dangerous goods intended and shall not cause a dangerous effect e.g. catalysing a reaction or reacting with the dangerous goods.

6.2.1.2.2 Pressure receptacles and their closures shall be made of the materials specified in the design and construction technical standards and the applicable packing instruction for the substances intended for transport in the pressure receptacle. The materials shall be resistant to brittle fracture and to stress corrosion cracking as indicated in the design and construction technical standards.

6.2.1.3 *Service equipment*

6.2.1.3.1 Except for pressure relief devices, valves, piping, fittings and other equipment subjected to pressure, shall be designed and constructed to withstand at least 1.5 times the test pressure of the pressure receptacles.

6.2.1.3.2 Service equipment shall be configured or designed to prevent damage that could result in the release of the pressure receptacle contents during normal conditions of handling and transport. Manifold piping leading to shut-off valves shall be sufficiently flexible to protect the valves and the piping from shearing or releasing the pressure receptacle contents. The filling and discharge valves and any protective caps shall be capable of being secured against unintended opening. Valves shall be protected as specified in 4.1.6.1.7.

6.2.1.3.3 Pressure receptacles which are not capable of being handled manually or rolled, shall be fitted with devices (skids, rings, straps) ensuring that they can be safely handled by mechanical means and so arranged as not to impair the strength or, nor cause undue stresses, in the pressure receptacle.

6.2.1.3.4 Individual pressure receptacles shall be equipped with approved pressure relief devices as required in packing instruction P200(1) or as specified by the country of use. When fitted, pressure relief devices on manifolded horizontal pressure receptacles filled with flammable gas shall be arranged to discharge freely to the open air in such a manner as to prevent any impingement of escaping gas upon the pressure receptacles under normal conditions of transport.

[6.2.1.3.5 Reserved for cryogenic receptacles]

6.2.1.3.6 Pressure receptacles whose filling is measured by volume shall be provided with a level indicator.

6.2.1.4 *Initial inspection and test*

6.2.1.4.1 New pressure receptacles shall be subjected to testing and inspection during and after manufacture in accordance with the applicable design standards including the following:

On an adequate sample of pressure receptacles:

(a) Testing of the mechanical characteristics of the material of construction;

(b) Verification of the minimum wall thickness;

(c) Verification of the homogeneity of the material for each manufacturing batch, and inspection of the external and internal conditions of the pressure receptacles;

(d) Inspection of the neck threads;

(e) Verification of the conformance with the design standard;

For all pressure receptacles:

(f) A hydraulic pressure test. Pressure receptacles shall withstand the test pressure without expansion greater than that allowed in the design specification;

NOTE : With the agreement of the inspection body, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

(g) Inspection and assessment of manufacturing defects and either repairing them or rendering the pressure receptacles unserviceable;

(h) An inspection of the markings on the pressure receptacles;

(i) In addition, pressure receptacles intended for the transport of UN 1001 acetylene, dissolved, and UN 3374 acetylene, solvent free, shall be inspected to ensure proper installation and condition of the porous material and the quantity of solvent.

6.2.1.5 ***Periodic inspection and test***

6.2.1.5.1 Refillable pressure receptacles, other than cryogenic receptacles, shall be subjected to periodic inspections and tests under the supervision of an inspection body, in accordance with the following:

(a) Check of the external conditions of the pressure receptacle and verification of the equipment and the external markings;

(b) Check of the internal conditions of the pressure receptacle (e.g. by weighing, internal inspection, checks of wall thickness);

(c) Checking of the neck threads;

(d) A hydraulic pressure test and, if necessary, verification of the characteristics of the material by suitable tests.

***NOTE 1**: With the agreement of the inspection body, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.*

NOTE 2: With the agreement of the competent authority, the hydraulic pressure test of cylinders and tubes may be replaced by an equivalent method based on acoustic emission or ultrasound.

6.2.1.5.2 For pressure receptacles intended for the transport of UN 1001 acetylene, dissolved, and UN 3374 acetylene, solvent free, only the external condition (corrosion, deformation) and the condition of the porous mass (loosening, settlement) shall be required to be examined.

6.2.1.5.3 Closed cryogenic pressure receptacles shall be inspected to verify external conditions, condition and operation of pressure relief devices and the legibility and adequacy of the markings. The thermal insulation need not be removed.

6.2.1.6 *Approval of pressure receptacles*

6.2.1.6.1 The conformity of pressure receptacles shall be assessed at time of manufacture as required by the competent authority. Pressure receptacles shall be inspected, tested and approved by an inspection body. The technical documentation shall include full specifications on design and construction, and full documentation on the manufacturing and testing.

6.2.1.6.2 Quality assurance systems shall conform to the requirements of the competent authority.

6.2.1.7 *Requirements for manufacturers*

6.2.1.7.1 The manufacturer shall be technically able and shall possess all resources required for the satisfactory manufacture of pressure receptacles; this relates in particular to qualified personnel:

(a) to supervise the entire manufacturing process;

(b) to carry out joining of materials; and

(c) to carry out the relevant tests.

6.2.1.7.2 The proficiency test of a manufacturer shall in all instances be carried out by an inspection body approved by the competent authority of the country of approval.

6.2.1.8 *Requirements for inspection bodies*

6.2.1.8.1 Inspection bodies shall be independent from manufacturing enterprises and competent to perform the tests, inspections and approvals required.

6.2.2 **Requirements for UN certified pressure receptacles**

In addition to the general requirements of 6.2.1, UN certified pressure receptacles shall comply with the requirements of this section, including the standards, as applicable.

NOTE: With the agreement of the competent authority, more recently published versions of the standards, if available, may be used.

6.2.2.1 *Design, construction and initial inspection and test*

6.2.2.1.1 The following standards apply for the design, construction, and initial inspection and test of UN certified cylinders:

ISO 9809-1:1999	Gas cylinders – Refillable seamless steel gas cylinders - Design, construction and testing - Part 1: Quenched and tempered steel cylinders with tensile strength less than 1100 MPa ***NOTE:*** *The note concerning the F factor in section 7.3 of this standard shall not be applied for UN certified cylinders.*
ISO 9809-2:2000	Gas cylinders – Refillable seamless steel gas cylinders - Design, construction and testing - Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1100 MPa
ISO 9809-3:2000	Gas cylinders – Refillable seamless steel gas cylinders - Design, construction and testing - Part 3: Normalized steel cylinders
ISO 7866:1999	Gas cylinders – Refillable seamless aluminium alloy gas cylinders – Design, construction and testing ***NOTE:*** *The note concerning the F factor in section 7.2 of this standard shall not be applied for UN certified cylinders. Aluminium alloy 6351A - T6 or equivalent is shall not be authorized.*
ISO 11118:1999	Gas cylinders – Non-refillable metallic gas cylinders - Specification and test methods

6.2.2.1.2 The following standards apply for the design, construction, and initial inspection and test of UN certified tubes:

ISO 11120:1999	Gas cylinders – Refillable seamless steel tubes for compressed gas transport, of water capacity between 150 *l* and 3000 *l* – Design, construction and testing ***NOTE:*** *The note concerning the F factor in section 7.1 of this standard shall not be applied for UN certified tubes*

6.2.2.1.3 The following standards apply for the design, construction and initial inspection and test of UN certified acetylene cylinders:

For the cylinder shell:

ISO 9809-1:1999	Gas cylinders – Refillable seamless steel gas cylinders - Design, construction and testing – Part 1: Quenched and tempered steel cylinders with tensile strength less than 1100 MPa ***NOTE:*** *The note concerning the F factor in section 7.3 of this standard shall not be applied for UN certified cylinders.*
ISO 9809-3:2000	Gas cylinders – Refillable seamless steel gas cylinders - Design, construction and testing – Part 3: Normalized steel cylinders
ISO 7866:1999	Gas cylinders – Refillable seamless aluminium alloy gas cylinders – Design, construction and testing ***NOTE:*** *The note concerning the F factor in section 7.2 of this standard shall not be applied for UN certified cylinders. Aluminium alloy 6351A – T6 or equivalent is shall not be authorized.*
ISO 11118:1999	Gas cylinders – Non-refillable metallic gas cylinders - Specification and test methods

For the porous mass in the cylinder:

ISO 3807-1:2000	Cylinders for acetylene – Basic requirements - Part 1: Cylinders without fusible plugs
ISO 3807-2:2000	Cylinders for acetylene – Basic requirements - Part 2: Cylinders with fusible plugs

6.2.2.2 ***Materials***

In addition to the material requirements specified in the pressure receptacle design and construction standards, and any restrictions specified in the applicable packing instruction for the gas(es) to be transported (e.g. packing instruction P200), the following standards apply to material compatibility:

ISO 11114-1:1997	Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 1: Metallic materials
ISO 11114-2:2000	Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 2: Non-metallic materials

6.2.2.3 ***Service equipment***

The following standards apply to closures and their protection:

ISO 11117:1998	Gas cylinders - Valve protection caps and valve guards for industrial and medical gas cylinders- Design, construction and tests
ISO 10297:1999	Gas cylinders –Refillable gas cylinder valves - Specification and type testing.

6.2.2.4 ***Periodic inspection and test***

The following standards apply to the periodic inspection and testing of UN certified cylinders:

ISO 6406:1992	Periodic inspection and testing of seamless steel gas cylinders
ISO 10461:1993	Seamless aluminium - alloy gas cylinders - Periodic inspection and testing
ISO 10462:1994	Cylinders for dissolved acetylene – Periodic inspection and maintenance

6.2.2.5 ***Conformity assessment system and approval of pressure receptacles***

6.2.2.5.1 *Definitions*

For the purposes of this section:

Conformity assessment system means a system for competent authority approval of a manufacturer, by pressure receptacle design type approval, approval of manufacturer's quality system and approval of inspection bodies;

Design type means a pressure receptacle design as specified by a particular pressure receptacle standard;

Verify means confirm by examination or provision of objective evidence that specified requirements have been fulfilled.

6.2.2.5.2 *General requirements*

Competent Authority

6.2.2.5.2.1 The competent authority that approves the pressure receptacle shall approve the conformity assessment system for the purpose of ensuring that pressure receptacles conform to the requirements of these model regulations. In instances where the competent authority that approves a pressure receptacle is not the competent authority in the country of manufacture, the marks of the approval country and the country of manufacture shall be indicated in the pressure receptacle marking (see 6.2.2.6 and 6.2.2.7).

The competent authority of the country of approval shall supply, upon request, evidence demonstrating compliance to this conformity assessment system to its counterpart in a country of use.

6.2.2.5.2.2 The competent authority may delegate its functions in this conformity assessment system in whole or in part.

6.2.2.5.2.3 The competent authority shall ensure that a current list of approved inspection bodies and their identity marks and approved manufacturers and their identity marks is available.

Inspection body

6.2.2.5.2.4 The inspection body shall be approved by the competent authority as an inspector of pressure receptacles and shall:

(a) have a staff with an organisational structure, capable, trained, competent, and skilled, to satisfactorily perform its technical functions;

(b) have access to suitable and adequate facilities and equipment;

(c) operate in an impartial manner and be free from any influence which could prevent it from doing so;

(d) ensure confidentiality of the commercial and proprietary activities of the manufacturer and other bodies;

(e) maintain clear demarcation between actual inspection body functions and unrelated functions;

(f) operate a documented quality system;

(g) ensure that the tests and inspections specified in the relevant pressure receptacle standard and these model regulations are performed; and

(h) maintain an effective and appropriate report and record system in accordance with 6.2.2.5.6.

6.2.2.5.2.5 The inspection body shall perform design type approval, pressure receptacle production testing and inspection, and certification to verify conformity with the relevant pressure receptacle standard (see 6.2.2.5.4 and 6.2.2.5.5).

Manufacturer

6.2.2.5.2.6 The manufacturer shall

(a) operate a documented quality system in accordance with 6.2.2.5.3;

(b) apply for design type approvals in accordance with 6.2.2.5.4;

(c) select an inspection body from the list of approved inspection bodies maintained by the competent authority in the country of approval; and

(d) maintain records in accordance with 6.2.2.5.6.

Testing laboratory

6.2.2.5.2.7 The testing laboratory shall have:

(a) staff with an organisational structure, sufficient in number, competence, and skill; and

(b) suitable and adequate facilities and equipment to perform the tests required by the manufacturing standard to the satisfaction of the inspection body.

6.2.2.5.3 *Manufacturer's quality system*

6.2.2.5.3.1 The quality system shall contain all the elements, requirements, and provisions adopted by the manufacturer. It shall be documented in a systematic and orderly manner in the form of written policies, procedures and instructions.

The contents shall in particular include adequate descriptions of:

(a) the organisational structure, responsibilities, and power of the management with regard to design and product quality;

(b) the design control and design verification techniques, processes, and systematic actions that will be used when designing the pressure receptacles;

(c) the relevant pressure receptacle manufacturing, quality control, quality assurance, and process operation instructions that will be used;

(d) quality records, such as inspection reports, test data, and calibration data;

(e) management reviews to ensure the effective operation of the quality system arising from the audits in accordance with 6.2.2.5.3.2 ;

(f) the process describing how customer requirements are met;

(g) the process for control of documents and their revision;

(h) the means for control of non-conforming pressure receptacles, purchased components, in-process and final materials; and

(i) training programmes for relevant personnel.

6.2.2.5.3.2 Audit of the quality system

The quality system shall be initially assessed to determine whether it meets the requirements in 6.2.2.5.3.1 to the satisfaction of the competent authority.

The manufacturer shall be notified of the results of the audit. The notification shall contain the conclusions of the audit and any corrective actions required.

Periodic audits shall be carried out, to the satisfaction of the competent authority, to ensure that the manufacturer maintains and applies the quality system. Reports of the periodic audits shall be provided to the manufacturer.

6.2.2.5.3.3 Maintenance of the quality system

The manufacturer shall maintain the quality system as approved in order that it remains adequate and efficient.

The manufacturer shall notify the competent authority that approved the quality system, of any intended changes. The proposed changes shall be evaluated in order to determine whether the amended quality system will still satisfy the requirements in 6.2.2.5.3.1.

6.2.2.5.4 *Approval process*

Initial design type approval

6.2.2.5.4.1 The initial design type approval shall consist of approval of the manufacturer's quality system and approval of the pressure receptacle design to be produced. An application for an initial design type approval shall encompass the requirements of 6.2.2.5.3, 6.2.2.5.4.2 to 6.2.2.5.4.6 and 6.2.2.5.4.9.

6.2.2.5.4.2 A manufacturer desiring to produce pressure receptacles in accordance with a pressure receptacle standard and these model regulations shall apply for, obtain, and retain a Design Type Approval Certificate issued by the competent authority in the country of approval for at least one pressure receptacle design type in accordance with the procedure given in 6.2.2.5.4.9. This written approval shall, on request, be submitted to the competent authority of the country of use.

6.2.2.5.4.3 An application shall be made for each manufacturing facility and shall include:

(a) the name and registered address of the manufacturer and in addition, if the application is submitted by an authorised representative, its name and address;

(b) the address of the manufacturing facility (if different from the above);

(c) the name and title of the person(s) responsible for the quality system;

(d) the designation of the pressure receptacle and the relevant pressure receptacle standard;

(e) details of any refusal of approval of a similar application by any other competent authority;

(f) the identity of the inspection body for design type approval;

(g) documentation on the manufacturing facility as specified under 6.2.2.5.3.1 and

(h) the technical documentation required for design type approval, which shall enable verification of the conformity of the pressure receptacles with the requirements of the relevant pressure receptacle design standard. The technical documentation shall cover the design and method of manufacture and shall contain, as far as is relevant for assessment, at least the following:

(i) pressure receptacle design standard, design and manufacturing drawings, showing components and subassemblies, if any;

(ii) descriptions and explanations necessary for the understanding of the drawings and intended use of the pressure receptacles;

(iii) a list of the standards necessary to fully define the manufacturing process;

(iv) design calculations and material specifications; and

(v) design type approval test reports, describing the results of examinations and tests carried out in accordance with 6.2.2.5.4.9.

6.2.2.5.4.4 An initial audit in accordance with 6.2.2.5.3.2 shall be performed to the satisfaction of the competent authority.

6.2.2.5.4.5 If the manufacturer is denied approval, the competent authority shall provide written detailed reasons for such denial.

6.2.2.5.4.6 Following approval, changes to the information submitted under 6.2.2.5.4.2 relating to the initial approval shall be provided to the competent authority.

Subsequent design type approvals

6.2.2.5.4.7 An application for a subsequent design type approval shall encompass the requirements of 6.2.2.5.4.8 and 6.2.2.5.4.9, provided a manufacturer is in the possession of an initial design type approval. In such a case, the manufacturer's quality system according to 6.2.2.5.3 shall have been approved during the initial design type approval and shall be applicable for the new design.

6.2.2.5.4.8 The application shall include:

(a) the name and address of the manufacturer and in addition, if the application is submitted by an authorised representative, its name and address;

(b) details of any refusal of approval of a similar application by any other competent authority;

(c) evidence that initial design type approval has been granted; and

(d) the technical documentation, as described in 6.2.2.5.4.3 (b).

Procedure for design type approval

6.2.2.5.4.9 The inspection body shall:

(a) examine the technical documentation to verify that:

(i) the design is in accordance with the relevant provisions of the standard, and

(ii) the prototype lot has been manufactured in conformity with the technical documentation and is representative of the design;

(b) verify that the production inspections have been carried out as required in accordance with 6.2.2.5.5;

(c) select pressure receptacles from a prototype production lot and supervise the tests of these pressure receptacles as required for design type approval;

(d) perform or have performed the examinations and tests specified in the pressure receptacle standard to determine that:

(i) the standard has been applied and fulfilled, and

(ii) the procedures adopted by the manufacturer meet the requirements of the standard; and

(e) ensure that the various type approval examinations and tests are correctly and competently carried out.

After prototype testing has been carried out with satisfactory results and all applicable requirements of 6.2.2.5.4 have been satisfied, a Design Type Approval Certificate shall be issued which shall include the name and address of the manufacturer, results and conclusions of the examination, and the necessary data for identification of the design type.

If the manufacturer is denied a design type certification, the competent authority shall provide written detailed reasons for such denial.

6.2.2.5.4.10 Modifications to approved design types

The manufacturer shall inform the issuing competent authority of modifications to the approved design type as specified in the pressure receptacle standard. A subsequent design type approval shall be requested where such modifications constitute a new design according to the relevant pressure receptacle standard. This additional approval shall be given in the form of an amendment to the original Design Type Approval Certificate.

6.2.2.5.4.11 Upon request, the competent authority shall communicate to any other competent authority, information concerning design type approval, modifications of approvals, and withdrawn approvals.

6.2.2.5.5 *Production inspection and certification*

An inspection body, or its delegate, shall carry out the inspection and certification of each pressure receptacle. The inspection body selected by the manufacturer for inspection and testing during production may be different from the inspection body used for the design type approval testing.

Where it can be demonstrated to the satisfaction of the inspection body that the manufacturer has trained and competent inspectors, independent of the manufacturing operations, inspection may be performed by those inspectors. In such a case, the manufacturer shall maintain training records of the inspectors.

The inspection body shall verify that the inspections by the manufacturer and tests performed on those pressure receptacles, fully conform to the standard and the requirements of these Model Regulations. Should non-conformance in conjunction with this inspection and testing be determined, the permission to have inspection performed by the manufacturer's inspectors may be withdrawn.

The manufacturer shall, after approval by the inspection body, make a declaration of conformity with the certified design type. The application of the pressure receptacle certification marking shall be considered a declaration that the pressure receptacle complies with the applicable pressure receptacle standards and the requirements of this conformity assessment system and these model regulations. The inspection body shall affix or delegate the manufacturer to affix the pressure receptacle certification marking and the registered mark of the inspection body to each approved pressure receptacle.

A certificate of compliance, signed by the inspection body and the manufacturer, shall be issued before the pressure receptacles are filled.

6.2.2.5.6 *Records*

Design type approval and certificate of compliance records shall be retained by the manufacturer and the inspection body for not less than 20 years.

6.2.2.6 ***Marking of UN certified refillable pressure receptacles***

UN certified refillable pressure receptacles shall be marked clearly and legibly with certification and gas or pressure receptacle specific marks. These marks shall be permanently affixed (e.g. stamped, engraved, or etched) on the pressure receptacle. The marks shall be on the shoulder, top end or neck of the pressure receptacle or on a permanently affixed component of the pressure receptacle (e.g. welded collar). Except for the "UN" mark, the minimum size of the marks shall be 5mm for pressure receptacles with a diameter greater than or equal to 140 mm and 2.5 mm for pressure receptacles with a diameter less than 140 mm. The minimum size of the "UN" mark shall be 10 mm for pressure receptacles with a diameter greater than or equal to 140 mm and 5 mm for pressure receptacles with a diameter less than 140 mm.

6.2.2.6.1 The following certification marks shall be applied:

(a) The UN packaging symbol

This symbol shall only be marked on pressure receptacles which conform to the requirements of these Model Regulations for UN certified pressure receptacles.

(b) The technical standard (e.g. ISO 9809-1) used for design, construction and testing;

(c) The character(s) identifying the country of approval as indicated by the distinguishing signs of motor vehicles in international traffic;

(d) The identity mark or stamp of the inspection body that is registered with the competent authority of the country authorizing the marking;

(e) The date of the initial inspection, the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/").

6.2.2.6.2 The following operational marks shall be applied:

(f) The test pressure in bar, preceded by the letters "PH" and followed by the letters "BAR";

(g) The empty mass of the pressure receptacle including all permanently attached integral parts (e.g. neck ring, foot ring, etc.) in kilograms, followed by the letters "KG". This mass shall not include the mass of valve, valve cap or valve guard, any coating, or porous mass for acetylene. The empty mass shall be expressed to three significant figures rounded up to the last digit. For cylinders of less than 1 kg, the mass shall be expressed to two significant figures rounded up to the last digit;

(h) The minimum guaranteed wall thickness of the pressure receptacle in millimetres followed by the letters "MM". This mark is not required for pressure receptacles with a water capacity less than or equal to 1 litre or for composite cylinders;

(i) In the case of pressure receptacles intended for the transport of compressed gases, UN 1001 acetylene, dissolved, and UN 3374 acetylene, solvent free, the working pressure in bar, preceded by the letters "PW";

(j) In the case of liquefied gases, the water capacity in litres expressed to three significant digits rounded down to the last digit, followed by the letter "L". If the value of the minimum or nominal water capacity is an integer, the digits after the decimal point may be neglected;

(k) In the case of UN 1001 acetylene, dissolved, the total of the mass of the empty receptacle, the fittings and accessories not removed during filling, the porous material, the solvent and the saturation gas expressed to two significant figures rounded down to the last digit followed by the letters "KG";

(l) In the case of UN 3374 acetylene, solvent free, the total of the mass of the empty receptacle, the fittings and accessories not removed during filling and the porous material expressed to two significant figures rounded down to the last digit followed by the letters "KG".

6.2.2.6.3 The following manufacturing marks shall be applied

(m) Identification of the cylinder thread (e.g. 25E);

(n) The manufacturer's mark registered by the competent authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark shall be preceded by the character(s) identifying the country of manufacture as indicated by the distinguishing signs of motor vehicles in international traffic. The country mark and the manufacturer's mark shall be separated by a space or slash;

(o) The serial number assigned by the manufacturer;

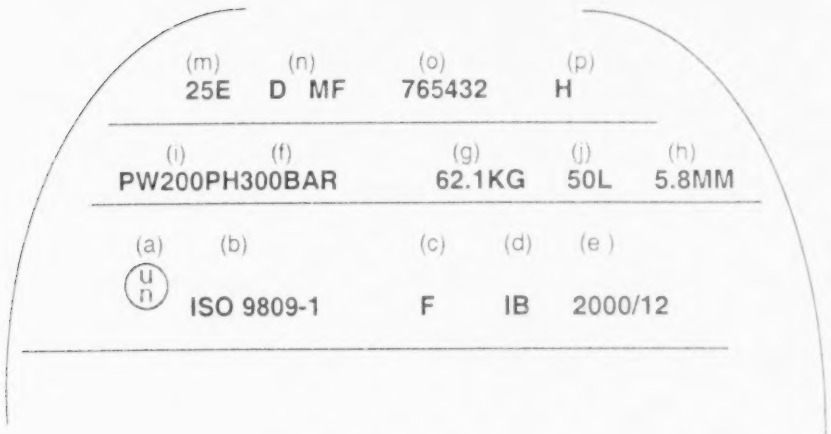
(p) In the case of steel pressure receptacles and composite pressure receptacles with steel liner intended for the transport of gases with a risk of hydrogen embrittlement, the letter "H" showing compatibility of the steel (see ISO 11114-1:1997).

6.2.2.6.4 The above marks shall be placed in three groups as shown in the example below.

- Manufacturing marks shall be the top grouping and shall appear consecutively in the sequence given in 6.2.2.6.3.

- The middle grouping shall include the test pressure (f) which shall be immediately preceded by the working pressure (i) when the latter is required.

- Certification marks shall be the bottom grouping and shall appear in the sequence given in 6.2.2.6.1.



6.2.2.6.5 Other marks are allowed in areas other than the side wall, provided they are made in low stress areas and are not of a size and depth that will create harmful stress concentrations. Such marks shall not conflict with required marks.

6.2.2.6.6 In addition to the preceding marks, each refillable pressure receptacle shall be marked indicating the date (year and month) of the last periodic inspection and the registered mark of the inspection body authorized by the competent authority of the country of use.

6.2.2.7 Marking of UN certified non-refillable pressure receptacles

UN certified non-refillable pressure receptacles shall be marked clearly and legibly with certification and gas or pressure receptacle specific marks. These marks shall be permanently affixed (e.g. stencilled, stamped, engraved, or etched) on the pressure receptacle. Except when stencilled, the marks shall be on the shoulder, top end or neck of the pressure receptacle or on a permanently affixed component of the pressure receptacle (e.g. welded collar). Except for the "UN" mark and the "DO NOT REFILL" mark, the minimum size of the marks shall be 5mm for pressure receptacles with a diameter greater than or equal to 140 mm and 2.5 mm for pressure receptacles with a diameter less than 140 mm. The minimum size of the "UN" mark shall be 10mm for pressure receptacles with a diameter greater than or equal to 140 mm and 5mm for pressure receptacles with a diameter less than 140 mm. The minimum size of the "DO NOT REFILL" mark shall be 5 mm.

6.2.2.7.1 The marks listed in 6.2.2.6.1 to 6.2.2.6.3 shall be applied with the exception of (g), (h), and (m). The serial number (o) may be replaced by the batch number. In addition, the words "DO NOT REFILL" in letters of at least 5 mm in height are required.

6.2.2.7.2 The requirements of 6.2.2.6.4 shall apply.

NOTE: Non-refillable pressure receptacles may, on account of their size, substitute this marking by a label (see 5.2.2.2.1.2).

6.2.2.7.3 Other marks are allowed provided they are made in low stress areas other than the side wall and are not of a size and depth that will create harmful stress concentrations. Such marks shall not conflict with required marks.

6.2.3 Requirements for non-UN certified pressure receptacles

6.2.3.1 Pressure receptacles not designed, constructed, inspected, tested and approved according to the requirements of 6.2.2 shall be designed, constructed, inspected, tested and approved in accordance with the provisions of a technical code recognised by the competent authority and the general requirements of 6.2.1.

6.2.3.2 Pressure receptacles designed, constructed, inspected, tested and approved under the provisions of this section shall not be marked with the UN packaging symbol

6.2.3.3 For metallic cylinders, tubes, pressure drums and bundles of cylinders, the construction shall be such that the minimum burst ratio (burst pressure divided by test pressure) is:

1.50 for refillable pressure receptacles,
2.00 for non-refillable pressure receptacles.

6.2.3.4 Marking shall be in accordance with the requirements of the competent authority of the country of use.".

6.2.4 Renumber the existing 6.2.2 as 6.2.4 and amend the title to read:

"**6.2.4 Requirements for aerosol dispensers and small receptacles containing gas (gas cartridges)**"

The existing 6.2.2.1 and 6.2.2.2 become 6.2.4.1 and 6.2.4.2 respectively.

Chapter 6.3

6.3.1.1 In the first sentence, replace "may, after decision by the competent authority" with "shall".

Add the following sentence at the end:

"Each element of the marking applied in accordance with (a) to (g) shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable.".

6.3.3 Add a new paragraph at the end of Chapter 6.3 as follows:

"**6.3.3 Test report**

6.3.3.1 A test report containing at least the following particulars shall be drawn up and shall be available to the users of the packaging:

1. Name and address of the test facility;
2. Name and address of applicant (where appropriate);
3. A unique test report identification;
4. Date of the test report;
5. Manufacturer of the packaging;
6. Description of the packaging design type (e.g. dimensions, materials, closures, thickness, etc.), including method of manufacture (e.g. blow moulding) and which may include drawing(s) and/or photograph(s);
7. Maximum capacity;
8. Characteristics of test contents, e.g. viscosity and relative density for liquids and particle size for solids;
9. Test descriptions and results;
10. The test report shall be signed with the name and status of the signatory.

6.3.3.2 The test report shall contain statements that the packaging prepared as for transport was tested in accordance with the appropriate requirements of this Chapter and that the use of other packaging methods or components may render it invalid. A copy of the test report shall be available to the competent authority.".

Chapter 6.4

6.4.5.4 Doesn't apply to the English version.

6.4.5.4.4 For "ISO 1496: 1-1990" read "ISO 1496-1: 1990".

6.4.6.1 Doesn't apply to the English version.

6.4.6.4 (b) For "2.8 MPa" read: "2.76 MPa".

6.4.11.7, 6.4.11.9, 6.4.12.2, 6.4.7.16, 6.4.7.17 and 6.4.22 Do not apply to the English version.

6.4.23.4 Amend the introductory sentence to read: "An application for approval of Type B(U) or Type C package design shall include:"

6.4.23.4 (f) Replace "the applicant shall state and justify" with "a statement and a justification of".

Delete "for irradiated fissile nuclear fuel".

Replace "describe" with "a description of".

6.4.23.9 (a) Add superscript 1/ at the end, and a footnote to read as follows:

"1/ See Vienna Convention on Road Traffic (1968)."

6.4.23.9 (c) Amend the text pertaining to B(U), B(M) and Type C package design as follows:

"B(U) Type B(U) package design [B(U)F if for fissile material]
B(M) Type B(M) package design [B(M)F if for fissile material]
C Type C package design (CF if for fissile material)".

6.4.23.9 (d) and
6.4.23.10 (a) Do not apply to the English version.

6.4.23.12 (k) First line: replace "packages of fissile material" with "packages containing fissile material".

6.4.23.13 Insert the missing sub-paragraph (h) to read as follows:

"(h) Reference to information provided by the applicant relating to specific actions to be taken prior to the shipment.".

6.4.23.14 (m) Replace "packages of fissile material" with "packages containing fissile material".

6.4.24.3 Doesn't apply to the English version.

Chapter 6.5

6.5.1.1.4 Add a new paragraph to read:

"Manufacturers and subsequent distributors of IBCs shall provide information regarding procedures to be followed and a description of the types and dimensions of closures (including required gaskets) and any other components needed to ensure that IBCs as presented for transport are capable of passing the applicable performance tests of this Chapter.".

6.5.1.2 Delete the definition of *Maximum permissible load.*

Amend the definition of *Maximum permissible gross mass* to avoid the term "load" to read:

"*Maximum permissible gross mass* means the mass of the IBC and any service or structural equipment together with the maximum net mass.".

6.5.1.4.1 (a) Amend the top line centre column in the table to read "For solids, filled or discharged".

6.5.1.4.3 Change "loaded" to "filled" in the table 18 times.

6.5.1.6.4 Amend last sentence to read:

"A report of each inspection shall be kept by the owner of the IBC at least until the next inspection. The report shall include the results of the inspection and shall identify the party performing the inspection (see also the marking requirements in 6.5.2.2.1).".

6.5.1.6.5 Amend to read:

"When an IBC is impaired as a result of impact (e.g. accident) or any other cause, it shall be repaired or otherwise maintained (see definition of *"Routine maintenance of IBCs"* in 1.2.1), so as to conform to the design type. The bodies of rigid plastics IBCs and the inner receptacles of composite IBCs that are impaired shall be replaced.".

6.5.1.6.6 Add a new 6.5.1.6.6 to read:

"6.5.1.6.6 *Repaired IBCs*

6.5.1.6.6.1 In addition to any other testing and inspection requirements in these Regulations, an IBC shall be subjected to the full testing and inspection requirements set out in 6.5.4.14.3 and 6.5.1.6.4 (a), and the required reports shall be prepared, whenever it is repaired.

6.5.1.6.6.2 The Party performing the tests and inspections after the repair shall durably mark the IBC near the manufacturer's UN design type marking to show:

(a) the State in which the tests and inspections were carried out;

(b) the name or authorized symbol of the party performing the tests and inspections; and

(c) the date (month, year) of the tests and inspections.

6.5.1.6.6.3 Test and inspections performed in accordance with 6.5.1.6.6.1 may be considered to satisfy the requirements for the two and a half and five year periodic tests and inspections.".

Renumber existing 6.5.1.6.6 as 6.5.1.6.7

6.5.2.1.1 (h) Amend to read: "The maximum permissible gross mass in kg".

6.5.2.1.1 Add the following sentence at the end:

"Each element of the marking applied in accordance with (a) to (h) and with 6.5.2.2 shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable."

6.5.2.2.1 Change "Maximum loading/discharge pressure" to "Maximum filling/discharge pressure".

6.5.3.1.1 Change "loaded" to "filled" twice.

6.5.3.1.5 In the second formula under "L_o", amend "5.65 A" to read "$5.65\sqrt{A}$ ".

6.5.3.3.1 Change "loaded" to "filled" 4 times.

6.5.3.3.6 Delete.

6.5.3.4.1 Change "loaded" to "filled" 4 times.

6.5.3.4.10 Delete this paragraph and renumber subsequent paragraphs accordingly.

6.5.3.5.1 Change "loaded" to "filled".

6.5.3.6.1 Change "loaded" to "filled".

6.5.4.4.2 Amend to read as follows:

"The IBC shall be filled. A load shall be added and evenly distributed. The mass of the filled IBC and the load shall be 1.25 times the maximum permissible gross mass.".

6.5.4.4.2, 6.5.4.5.2, 6.5.4.6.2,
6.5.4.7.2, 6.5.4.8.2, 6.5.4.9.2,
6.5.4.10.2, 6.5.4.11.2
and 6.5.4.12.2 Amend the heading of these paragraphs to read "Preparation of the IBC for test".

6.5.4.5.2 Amend to read as follows:

"Metal, rigid plastics and composite IBCs shall be filled. A load shall be added and evenly distributed. The mass of the filled IBC and the load shall be twice the maximum permissible gross mass. Flexible IBCs shall be filled to six times their maximum permissible load, the load being evenly distributed.".

6.5.4.6.2 Amend to read as follows:

"The IBC shall be filled to its maximum permissible gross mass. If the specific gravity of the product being used for testing makes this impracticable, the IBC shall additionally be loaded so that it is tested at its maximum permissible gross mass the load being evenly distributed.".

6.5.4.6.3(b)(i) Amend to read:

"one or more IBCs of the same type filled to the maximum permissible gross mass stacked on the test IBC;".

6.5.4.7.1 Change "loaded" to "filled".

6.5.4.8.1 Change "loaded" to "filled".

6.5.4.9.2 (b) Amend to read:

"(b) Flexible IBCs: the IBC shall be filled to not less than 95% of its capacity and to its maximum permissible gross mass, the contents being evenly distributed.".

6.5.4.10.2, 6.5.4.11.2
and 6.5.4.12.2 Amend these paragraphs to read as follows:

"The IBC shall be filled to not less than 95% of its capacity and to its maximum permissible gross mass, the contents being evenly distributed.".

6.5.4.10.3 Amend the second sentence of 6.5.4.10.3 to read: "The IBC shall then be subjected to a uniformly distributed superimposed load equivalent to twice the maximum permissible gross mass.".

6.5.4.14 Amend the heading to read: "Testing of metal, rigid plastics and composite IBCs".

6.5.4.14.3 Amend to read as follows:

"Each metal, rigid plastics and composite IBC for liquids, or for solids which are filled or discharged under pressure, shall be subjected to the leakproofness test, as an initial test (i.e. before the IBC is first used for transport), after repair, and at intervals of not more than two and a half years.".

6.5.4.14.4 Amend to read as follows:

"The results of tests and the identity of the party performing the tests shall be recorded in test reports to be kept by the owner of the IBC at least until the date of the next test.".

Chapter 6.6

6.6.1.3 Add the following new paragraph:

"6.6.1.3 The specific requirements for large packagings in 6.6.4 are based on large packagings currently used. In order to take into account progress in science and technology, there is no objection to the use of large packagings having specifications different from those in 6.6.4 provided they are equally effective, acceptable to the competent authority and able successfully to withstand the tests described in 6.6.5. Methods of testing other than those described in these Regulations are acceptable provided they are equivalent.".

6.6.2 Insert the number 6.6.2.1 before the existing text ("The code used...") and add the following new paragraph:

"6.6.2.2 The letter "W" may follow the Large Packaging code. The letter "W" signifies that the large packaging, although of the same type indicated by the code, is manufactured to a specification different from those in 6.6.4 and is considered equivalent in accordance with the requirements in 6.6.1.3.".

6.6.3.1 Add the following sentence at the end:

"Each element of the marking applied in accordance with (a) to (h) shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable.".

6.6.5.3.1.2, 6.6.5.3.1.3, 6.6.5.3.1.4, 6.6.5.3.2.2, 6.6.5.3.2.3, 6.6.5.3.3.2, 6.6.5.3.3.3, 6.6.5.3.3.4, 6.6.5.3.3.5, 6.6.5.3.4.2, 6.6.5.3.4.3, 6.6.5.3.4.5.1, and
6.6.5.3.4.5.3 Replace the word "packagings" with "packaging".

6.6.5.3.2.2 Replace the existing paragraph with the following text:

"6.6.5.3.2.2 *Preparation of large packagings for test.*

The large packaging shall be loaded to twice its maximum permissible gross mass. A flexible large packaging shall be loaded to six times its maximum permissible gross mass, the load being evenly distributed.".

6.6.5.3.3.3 Replace "plastic" with "plastics".

6.6.5.3.3.4 Replace "must" with "may".

6.6.5.3.4.5.3 Insert a comma after "drop test".

6.6.5.4.1, 6.6.5.4.2 and
6.6.5.4.3 Delete "s" from "packagings", where appropriate.

Chapter 6.7

6.7 Add at the end in the title: "AND MULTIPLE-ELEMENT GAS CONTAINERS (MEGCs)".

6.7.1.1 Amend the first sentence to read:

"The requirements of this Chapter apply to portable tanks intended for the transport of dangerous goods of Classes 2, 3, 4, 5, 6, 8 and 9, and to MEGCs intended for the transport of non-refrigerated gases of Class 2, by all modes of transport."

6.7.1.1 and
6.7.1.2 Insert "or MEGC" after "portable tank" in the second sentence and "or MEGCs" after "portable tanks" in the third.

6.7.2.1(b)(i) Below the headings "*Maximum allowable working pressure (MAWP)*" and "*Design pressure*" amend (b)(i) to read:

"(i) the absolute vapour pressure (in bar) of the substance at 65 °C (at the highest temperature during filling, discharge or transport for elevated temperature substances transported above 65 °C), minus 1 bar; and"

Under the definition of "*Portable tank*", replace "lifted onto a transport vehicle" with "loaded onto a transport vehicle".

6.7.2.2.3 and 6.7.2.2.7 Replace "substances" with "substance(s)".

6.7.2.2.9.1 Insert the following new paragraph:

"For portable tanks that are intended for use offshore, the dynamic stresses imposed by handling in open seas shall be taken into account.".

6.7.2.2.10 Insert, after the second sentence, the following text:

"A shell used for the transport of solid substances of packing groups II or III only which do not liquefy during transport may be designed for a lower external pressure, subject to competent authority approval. In this case the vacuum-relief device shall be set to relieve at this lower pressure.".

6.7.2.2.16 Amend to read "... portable tank instruction indicated in Column 10 of the Dangerous Goods List and described in 4.2.5.2.6 or .... of the Dangerous Goods List and described in 4.2.5.3, portable tanks...".

6.7.2.2.17 Add the following new paragraph:

"6.7.2.2.17 Thermal insulation directly in contact with the shell intended for substances transported at elevated temperature shall have an ignition temperature at least 50 °C higher than the maximum design temperature of the tank.".

6.7.2.3.2 Replace "applicable tank instruction" with "applicable portable tank instruction". Add at the end of the second sentence "and described in 4.2.4.3.".

6.7.2.4.1 (c) Amend to read "... portable tank instruction indicated in Column 10 of the Dangerous Goods List and described in 4.2.4.2.6 or .... of the Dangerous Goods List and described in 4.2.4.3.".

6.7.2.4.6 and 6.7.2.4.7 Amend the explanation of "e_0" to read:

"minimum thickness (in mm) of the reference steel specified in the applicable portable tank instruction indicated in Column 10 of the Dangerous Goods List and described in 4.2.4.2.6 or by a portable tank special provision indicated in Column 11 of the Dangerous Goods List and described in 4.2.4.3;".

6.7.2.5 Add the following new paragraphs:

"6.7.2.5.12 The heating system shall be designed or controlled so that a substance cannot reach a temperature at which the pressure in the tank exceeds its MAWP or causes other hazards (e.g. dangerous thermal decomposition).

6.7.2.5.13 The heating system shall be designed or controlled so that power for internal heating elements shall not be available unless the heating elements are completely submerged. The temperature at the surface of the heating elements for internal heating equipment, or the temperature at the shell for external heating equipment shall, in no case, exceed 80% of the autoignition temperature (in °C) of the substance transported.

6.7.2.5.14 If an electrical heating system is installed inside the tank, it shall be equipped with an earth leakage circuit breaker with a releasing current of less than 100mA.

6.7.2.5.15 Electrical switch cabinets mounted to tanks shall not have a direct connection to the tank interior and shall provide protection of at least the equivalent of type IP56 according to IEC 144 or IEC 529.".

6.7.2.6.4 Replace "6.7.2.6.3.1" with "6.7.2.6.3 (a)".

6.7.2.8.3 Amend to read "..., pinholing, ...".

6.7.2.12.2.3 In the title, replace "emergency vent capacity" with "required rate of discharge".

6.7.2.19.4 Insert after the first sentence the following text :

"For tanks only used for the transport of solid substances other than toxic or corrosive substances and which do not liquefy during transport, the hydraulic pressure test may be replaced by a suitable pressure test at 1.5 times the MAWP, subject to competent authority approval.".

6.7.2.19.5 In the last sentence, amend "procedures by the competent authority" to read "procedures specified by the competent authority".

6.7.2.19.8 (a) Replace "the shell unsafe" with "the portable tank unsafe".

6.7.2.19.8 (b) and
6.7.3.15.8 (b) Shall read as follows: "... defects, or any other conditions,...".

6.7.2.20.1, 6.7.3.16.1
and 6.7.4.15.1 In the list of information, add "(see 6.7.1.2)" after "For Alternative Arrangements".

6.7 2.20.2 In the list of information to be marked on the portable tank, delete the words "Name of the substance(s).... 50 °C".

6.7.3.1 The end of the definition of "shell" shall read "... or external structural equipment;".

In the definition of "maximum allowable working pressure", under (b)(ii), read "... due to an increase".

6.7.3.1 and 6.7.4.1 — In the definition of "portable tank" replace "loaded and discharged" with "filled and discharged".

6.7.3.2.5 — Replace "gases" with "gas(es)".

6.7.3.2.11 — In the first sentence read "... the values according to national...", in the second sentence, "... when these greater values are...".

6.7.3.3.3.1 — Amend the second sentence to read "... when these greater values are..."

6.7.3.5.9 — Amend the second and third sentences to read: "All stop-valves with a screwed spindle shall... For other stop-valves the position (open and closed)...".

6.7.3.5.13 — Amend to read "valves and accessories".

6.7.3.8.1.1 — Amend the definition of "C" to read "a constant which is derived from one of the following formulae as a function of the ratio k of specific heats".

6.7.3.13.1 — Replace "fabricated" with "constructed".

6.7.3.14.1 — The second sentence shall read "This certificate shall attest that a portable tank ...".

6.7.4.2.13 (b) — Replace "... or, in case of austenitic steel..." with "... or, for austenitic steel...".

6.7.4.2.14 — Amend the second sentence to read: "... when these greater values are attested ...".

6.7.4.4.7 — Amend the references in the first sentence to read as follows: "6.7.4.4.1 to 6.7.4.4.5".

6.7.4.6.1 — In the second sentence, replace "fully open a pressure" with "fully open at a pressure".

6.7.4.10.1 — Amend the beginning to read as follows: "Each pressure-relief device inlet shall be...".

6.7.4.12.1 — Amend the references in the second sentence to read as follows: "The forces specified in 6.7.4.2.12 and the safety factor specified in 6.7.4.2.13...".

6.7.4.13.1 — Amend the 4th sentence to read: "... the materials of construction of the shell and jacket...".

6.7.4.14.9 — Delete "of the portable tank" in the first sentence.

6.7.4.15.1 — Replace "The names, in full, of the gases for..." with "The name, in full, of the gas(es) for...".

6.7.5 Add a new section to read:

"**6.7.5 Requirements for the design, construction, inspection and testing of multiple-element gas containers (MEGCs) intended for the transport of non-refrigerated gases**

6.7.5.1 ***Definitions***

For the purposes of this section:

Elements are restricted to cylinders, tubes or bundles of cylinders;

Leakproofness test means a test using gas subjecting the elements and the service equipment of the MEGC to an effective internal pressure of not less than 20% of the test pressure;

Manifold means an assembly of piping and valves connecting the filling and or discharge openings of the elements;

Maximum permissible gross mass (MPGM) means the sum of the tare mass of the MEGC and the heaviest load authorized for transport;

Service equipment means measuring instruments and filling, discharge, venting and safety devices;

Structural equipment means the reinforcing, fastening, protective and stabilizing members external to the elements.

6.7.5.2 ***General design and construction requirements***

6.7.5.2.1 The MEGC shall be capable of being loaded and discharged without the removal of its structural equipment. It shall possess stabilizing members external to the elements to provide structural integrity for handling and transport. MEGCs shall be designed and constructed with supports to provide a secure base during transport and with lifting and tie-down attachments which are adequate for lifting the MEGC including when loaded to its maximum permissible gross mass. The MEGC shall be designed to be loaded onto a transport unit or ship and shall be equipped with skids, mountings or accessories to facilitate mechanical handling.

6.7.5.2.2 MEGCs shall be designed, manufactured and equipped in such a way as to withstand all conditions to which they will be subjected during normal conditions of handling and transport. The design shall take into account the effects of dynamic loading and fatigue.

6.7.5.2.3 Elements of a MEGC shall be made of seamless steel and be constructed and tested according to Chapter 6.2. All of the elements in a MEGC shall be of the same design type.

6.7.5.2.4 Elements of MEGCs, fittings and pipework shall be:

(a) compatible with the substances intended to be transported (for gases see ISO 11114-1:1997 and ISO 11114 -2:2000); or

(b) properly passivated or neutralized by chemical reaction.

6.7.5.2.5 Contact between dissimilar metals which could result in damage by galvanic action shall be avoided.

6.7.5.2.6 The materials of the MEGC, including any devices, gaskets, and accessories, shall not adversely affect the gases intended for transport in the MEGC.

6.7.5.2.7 MEGCs shall be designed to withstand, without loss of contents, at least the internal pressure due to the contents, and the static, dynamic and thermal loads during normal conditions of handling and transport. The design shall demonstrate that the effects of fatigue, caused by repeated application of these loads through the expected life of the multiple-element gas container, have been taken into account.

6.7.5.2.8 MEGCs and their fastenings shall, under the maximum permissible load, be capable of withstanding the following separately applied static forces:

(a) in the direction of travel: twice the MPGM multiplied by the acceleration due to gravity (g)*;

(b) horizontally at right angles to the direction of travel: the MPGM (when the direction of travel is not clearly determined, the forces shall be equal to twice the MPGM) multiplied by the acceleration due to gravity (g)*;

(c) vertically upwards: the MPGM multiplied by the acceleration due to gravity (g)*; and

(d) vertically downwards: twice the MPGM (total loading including the effect of gravity) multiplied by the acceleration due to gravity (g)*.

6.7.5.2.9 Under the forces defined above, the stress at the most severely stressed point of the elements shall not exceed the values given in either the relevant standards of 6.2.2.1 or, if the elements are not designed, constructed and tested according to those standards, in the technical code or standard recognised or approved by the competent authority of the country of use (see 6.2.3.1).

6.7.5.2.10 Under each of the forces in 6.7.5.2.8, the safety factor for the framework and fastenings to be observed shall be as follows:

(a) for steels having a clearly defined yield point, a safety factor of 1.5 in relation to the guaranteed yield strength; or

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* *For calculation purposes, $g = 9.81\ m/s^2$.*

(b) for steels with no clearly defined yield point, a safety factor of 1.5 in relation to the guaranteed 0.2% proof strength and, for austenitic steels, the 1% proof strength.

6.7.5.2.11 MEGCs intended for the transport of flammable gases shall be capable of being electrically earthed.

6.7.5.2.12 The elements shall be secured in a manner that prevents undesired movement in relation to the structure and the concentration of harmful localized stresses.

6.7.5.3 ***Service equipment***

6.7.5.3.1 Service equipment shall be configured or designed to prevent damage that could result in the release of the pressure receptacle contents during normal conditions of handling and transport. When the connection between the frame and the elements allows relative movement between the sub-assemblies, the equipment shall be so fastened as to permit such movement without damage to working parts. The manifolds, the discharge fittings (pipe sockets, shut-off devices), and the stop-valves shall be protected from being wrenched off by external forces. Manifold piping leading to shut-off valves shall be sufficiently flexible to protect the valves and the piping from shearing, or releasing the pressure receptacle contents. The filling and discharge devices (including flanges or threaded plugs) and any protective caps shall be capable of being secured against unintended opening.

6.7.5.3.2 Each element intended for the transport of gases of Division 2.3 shall be fitted with a valve. The manifold for liquefied gases of Division 2.3 shall be so designed that the elements can be filled separately and be kept isolated by a valve capable of being sealed. For the transport of gases of Division 2.1, the elements shall be isolated by a valve into assemblies of not more than 3000 litres.

6.7.5.3.3 For filling and discharge openings of the MEGC, two valves in series shall be placed in an accessible position on each discharge and filling pipe. One of the valves may be a non-return valve. The filling and discharge devices may be fitted to a manifold. For sections of piping which can be closed at both ends and where a liquid product can be trapped, a pressure-relief valve shall be provided to prevent excessive pressure build-up. The main isolation valves on an MEGC shall be clearly marked to indicate their directions of closure. Each stop-valve or other means of closure shall be designed and constructed to withstand a pressure equal to or greater than 1.5 times the test pressure of the MEGC. All stop-valves with screwed spindles shall close by a clockwise motion of the handwheel. For other stop-valves, the position (open or closed) and direction of closure shall be clearly indicated. All stop-valves shall be designed and positioned to prevent unintentional opening. Ductile metals shall be used in the construction of valves or accessories.

6.7.5.3.4 Piping shall be designed, constructed and installed so as to avoid damage due to expansion and contraction, mechanical shock and vibration. Joints in tubing shall be brazed or have an equally strong metal union. The melting point of brazing materials shall be no lower than 525 °C. The rated pressure of the service equipment and of the manifold shall be not less than two thirds of the test pressure of the elements.

6.7.5.4 *Pressure-relief devices*

6.7.5.4.1 One or more pressure relief devices shall be fitted on MEGCs used for the transport of UN 1013 carbon dioxide and UN 1070 nitrous oxide. Other MEGCs shall be fitted with pressure relief devices as specified by the competent authority for the country of use.

6.7.5.4.2 When pressure relief devices are fitted, every element or group of elements of an MEGC that can be isolated shall then be fitted with one or more pressure relief devices. Pressure relief devices shall be of a type that will resist dynamic forces including liquid surge and shall be designed to prevent the entry of foreign matter, the leakage of gas and the development of any dangerous excess pressure.

6.7.5.4.3 MEGCs used for the transport of certain non-refrigerated gases identified in instruction T50 in 4.2.5.2.6 may have a pressure-relief device as required by the competent authority of the country of use. Unless an MEGC in dedicated service is fitted with an approved pressure relief device constructed of materials compatible with the load, such a device shall comprise a frangible disc preceding a spring-loaded device. The space between the frangible disc and the spring-loaded device may be equipped with a pressure gauge or a suitable telltale indicator. This arrangement permits the detection of disc rupture, pinholing or leakage which could cause a malfunction of the pressure relief device. The frangible disc shall rupture at a nominal pressure 10% above the start-to-discharge pressure of the spring-loaded device.

6.7.5.4.4 In the case of multi-purpose MEGCs used for the transport of low-pressure liquefied gases, the pressure-relief devices shall open at a pressure as specified in 6.7.3.7.1 for the gas having the highest maximum allowable working pressure of the gases allowed to be transported in the MEGC.

6.7.5.5 *Capacity of pressure relief devices*

6.7.5.5.1 The combined delivery capacity of the pressure relief devices when fitted shall be sufficient that, in the event of total fire engulfment, the pressure (including accumulation) inside the elements does not exceed 120% of the set pressure of the pressure relief device. The formula provided in CGA S-1.2-1995 shall be used to determine the minimum total flow capacity for the system of pressure relief devices. CGA S-1.1-1994 may be used to determine the relief capacity of individual elements. Spring-loaded pressure relief devices may be used to achieve the full relief capacity prescribed in the case of low pressure liquefied gases. In the case of multi-purpose MEGCs, the combined delivery capacity of the pressure-relief devices shall be taken for the gas which requires the highest delivery capacity of the gases allowed to be transported in the MEGC.

6.7.5.5.2 To determine the total required capacity of the pressure relief devices installed on the elements for the transport of liquefied gases, the thermodynamic properties of the gas shall be considered (see, for example, CGA S-1.2-1995 for low pressure liquefied gases and CGA S-1.1-1994 for high pressure liquefied gases).

6.7.5.6 *Marking of pressure-relief devices*

6.7.5.6.1 Spring loaded pressure relief devices shall be clearly and permanently marked with the following:

(a) the pressure (in bar or kPa) at which it is set to discharge;

(b) the allowable tolerance at the discharge pressure;

(c) the rated flow capacity of the device in standard cubic metres of air per second (m^3/s);

When practicable, the following information shall also be shown:

(d) the manufacturer's name and relevant catalogue number.

6.7.5.6.2 The rated flow capacity marked on frangible discs shall be determined according to CGA S-1.1-1994.

6.7.5.6.3 The rated flow capacity marked on spring loaded pressure relief devices for low pressure liquefied gases shall be determined according to ISO 4126-1:1991.

6.7.5.7 *Connections to pressure-relief devices*

6.7.5.7.1 Connections to pressure-relief devices shall be of sufficient size to enable the required discharge to pass unrestricted to the pressure relief device. No stop-valve shall be installed between the element and the pressure-relief devices, except when duplicate devices are provided for maintenance or other reasons, and the stop-valves serving the devices actually in use are locked open, or the stop-valves are interlocked so that at least one of the duplicate devices is always operable and capable of meeting the requirements of 6.7.5.5. There shall be no obstruction in an opening leading to or leaving from a vent or pressure-relief device which might restrict or cut-off the flow from the element to that device. The opening through all piping and fittings shall have at least the same flow area as the inlet of the pressure relief device to which it is connected. The nominal size of the discharge piping shall be at least as large as that of the pressure relief device outlet. Vents from the pressure-relief devices, when used, shall deliver the relieved vapour or liquid to the atmosphere in conditions of minimum backpressure on the relieving device.

6.7.5.8 *Siting of pressure-relief devices*

6.7.5.8.1 Each pressure relief device shall, under maximum filling conditions, be in communication with the vapour space of the elements for the transport of liquefied gases. The devices, when fitted, shall be so arranged as to ensure that the escaping vapour is discharged upwards and unrestrictedly as to prevent any impingement of escaping gas or liquid upon the MEGC, its elements or personnel. For flammable and oxidising gases, the escaping gas shall be directed away from the element in such a manner that it cannot impinge upon the other elements. Heat resistant protective devices which deflect the flow of gas are permissible provided the required pressure relief device capacity is not reduced.

6.7.5.8.2 Arrangements shall be made to prevent access to the pressure-relief devices by unauthorized persons and to protect the devices from damage caused by the MEGC overturning.

6.7.5.9 ***Gauging devices***

6.7.5.9.1 When a MEGC is intended to be filled by mass, it shall be equipped with one or more gauging devices. Level-gauges made of glass or other fragile material shall not be used.

6.7.5.10 ***MEGC supports, frameworks, lifting and tie-down attachments***

6.7.5.10.1 MEGCs shall be designed and constructed with a support structure to provide a secure base during transport. The forces specified in 6.7.5.2.8 and the safety factor specified in 6.7.5.2.10 shall be considered in this aspect of the design. Skids, frameworks, cradles or other similar structures are acceptable.

6.7.5.10.2 The combined stresses caused by element mountings (e.g. cradles, frameworks, etc.) and MEGC lifting and tie-down attachments shall not cause excessive stress in any element. Permanent lifting and tie-down attachments shall be fitted to all MEGCs. In no case shall mountings or attachments be welded onto the elements.

6.7.5.10.3 In the design of supports and frameworks, the effects of environmental corrosion shall be taken into account.

6.7.5.10.4 When MEGCs are not protected during transport, according to 4.2.4.3, the elements and service equipment shall be protected against damage resulting from lateral or longitudinal impact or overturning. External fittings shall be protected so as to preclude the release of the elements' contents upon impact or overturning of the MEGC on its fittings. Particular attention shall be paid to the protection of the manifold. Examples of protection include:

(a) protection against lateral impact which may consist of longitudinal bars;

(b) protection against overturning which may consist of reinforcement rings or bars fixed across the frame;

(c) protection against rear impact which may consist of a bumper or frame;

(d) protection of the elements and service equipment against damage from impact or overturning by use of an ISO frame in accordance with the relevant provisions of ISO1496-3:1995.

6.7.5.11 *Design approval*

6.7.5.11.1 The competent authority or its authorized body shall issue a design approval certificate for any new design of a MEGC. This certificate shall attest that the MEGC has been surveyed by that authority, is suitable for its intended purpose and meets the requirements of this Chapter, the applicable provisions for gases of Chapter 4.1 and of packing instruction P200. When a series of MEGCs are manufactured without change in the design, the certificate shall be valid for the entire series. The certificate shall refer to the prototype test report, the materials of construction of the manifold, the standards to which the elements are made and an approval number. The approval number shall consist of the distinguishing sign or mark of the country granting the approval, i.e. the distinguishing sign for use in international traffic, as prescribed by the Convention on Road Traffic, Vienna 1968, and a registration number. Any alternative arrangements according to 6.7.1.2 shall be indicated on the certificate. A design approval may serve for the approval of smaller MEGCs made of materials of the same type and thickness, by the same fabrication techniques and with identical supports, equivalent closures and other appurtenances.

6.7.5.11.2 The prototype test report for the design approval shall include at least the following:

(a) the results of the applicable framework test specified in ISO1496-3:1995;

(b) the results of the initial inspection and test specified in 6.7.5.12.3;

(c) the results of the impact test specified in 6.7.5.12.1; and

(d) certification documents verifying that the cylinders and tubes comply with the applicable standards.

6.7.5.12 *Inspection and testing*

6.7.5.12.1 For MEGCs meeting the definition of container in the CSC, a prototype representing each design shall be subjected to an impact test. The prototype MEGC shall be shown to be capable of absorbing the forces resulting from an impact not less than 4 times (4 g) the MPGM of the fully loaded MEGC at a duration typical of the mechanical shocks experienced in rail transport. The following is a listing of standards describing methods acceptable for performing the impact test:

Association of American Railroads,
Manual of Standards and Recommended Practices,
Specifications for Acceptability of Tank Containers (AAR 600), 1992

Canadian Standards Association (CSA),
Highway Tanks and Portable Tanks for the Transportation of Dangerous Goods
(B620-1987)

Deutsche Bahn AG
Zentralbereich Technik, Minden
Transportable tanks, longitudinal dynamic impact test

Société Nationale des Chemins de Fer Français
C.N.E.S.T. 002/1966
Tank containers, longitudinal external stresses and dynamic impact tests

Spoornet, South Africa
Engineering Development Centre (EDC)
Testing of ISO Tank Containers
Method EDC/TES/023/000/1991-06

6.7.5.12.2 The elements and items of equipment of each MEGC shall be inspected and tested before being put into service for the first time (initial inspection and test). Thereafter, MEGCs shall be inspected at no more than five year intervals (5 year periodic inspections). An exceptional inspection and test shall be performed, regardless of the last periodic inspection and test, when necessary according to 6.7.5.12.5.

6.7.5.12.3 The initial inspection and test of an MEGC shall include a check of the design characteristics, an external examination of the MEGC and its fittings with due regard to the gases to be transported, and a pressure test performed at the test pressure according to packing instruction P200. The pressure test of the manifold may be performed as a hydraulic test or by using another liquid or gas with the agreement of the competent authority or its authorized body. Before the MEGC is placed into service, a leakproofness test and a test of the satisfactory operation of all service equipment shall also be performed. When the elements and their fittings have been pressure-tested separately, they shall be subjected together after assembly to a leakproofness test.

6.7.5.12.4 The 5 year periodic inspection shall include an external examination of the structure, the elements and the service equipment in accordance with 6.7.5.12.6. The elements and the piping shall be tested at the periodicity specified in packing instruction P200 and in accordance with the provisions described in 6.2.1.5. When the elements and equipment have been pressure-tested separately, they shall be subjected together after assembly to a leakproofness test.

6.7.5.12.5 An exceptional inspection and test is necessary when the MEGC shows evidence of damaged or corroded areas, leakage, or other conditions that indicate a deficiency that could affect the integrity of the MEGC. The extent of the exceptional inspection and test shall depend on the amount of damage or deterioration of the MEGC. It shall include at least the examinations required under 6.7.5.12.6.

6.7.5.12.6 The examinations shall ensure that:

(a) the elements are inspected externally for pitting, corrosion, abrasions, dents, distortions, defects in welds or any other conditions, including leakage, that might render the MEGC unsafe for transport;

(b) the piping, valves and gaskets are inspected for corroded areas, defects, and other conditions, including leakage, that might render the MEGC unsafe for filling, discharge or transport;

(c) missing or loose bolts or nuts on any flanged connection or blank flange are replaced or tightened;

(d) all emergency devices and valves are free from corrosion, distortion and any damage or defect that could prevent their normal operation. Remote closure devices and self-closing stop-valves shall be operated to demonstrate proper operation;

(e) required markings on the MEGC are legible and in accordance with the applicable requirements; and

(f) the framework, the supports and the arrangements for lifting the MEGC are in satisfactory condition.

6.7.5.12.7 The inspections and tests in 6.7.5.12.1, 6.7.5.12.3, 6.7.5.12.4 and 6.7.5.12.5 shall be performed or witnessed by a body authorized by the competent authority. When the pressure test is a part of the inspection and test, the test pressure shall be the one indicated on the data plate of the MEGC. While under pressure, the MEGC shall be inspected for any leaks in the elements, piping or equipment.

6.7.5.12.8 When evidence of any unsafe condition is discovered, the MEGC shall not be returned to service until it has been corrected and the applicable tests and verifications are passed.

6.7.5.13 ***Marking***

6.7.5.13.1 Every MEGC shall be fitted with a corrosion resistant metal plate permanently attached to the MEGC in a conspicuous place readily accessible for inspection. The elements shall be marked in accordance with 6.2. At least the following information shall be marked on the plate by stamping or by any other similar method:

Country of manufacture

U N	Approval Country	Approval Number	For Alternative Arrangements (see 6.7.1.2): "AA"

Manufacturer's name or mark

Manufacturer's serial number

Authorized body for the design approval

Year of manufacture

Test pressure: _____bar gauge

Design temperature range_____ °C to _____ °C

Number of elements_____

Total water capacity _____ litres

Initial pressure test date and identification of the authorised body

Date and type of most recent periodic test:

Year _____ Month _____

Stamp of the authorised body who performed or witnessed the most recent test

NOTE: No metal plate may be fixed to the element.

6.7.5.13.2 The following information shall be marked on a metal plate firmly secured to the MEGC:

Name of the operator
Maximum permissible load mass _____ kg
Working pressure at 15°C: _____ bar gauge
Maximum permissible gross mass (MPGM): _____ kg
Unladen (tare) mass _____ kg"

PART 7

Chapter 7.1

7.1.2.1 Add "... and 7.1.3.2" at the end of the last sentence.

7.1.3.2 Insert the following new 7.1.3.2:

"7.1.3.2 *Mixed transport of goods of Class 1 with dangerous goods of other classes in freight containers, vehicles or wagons*

7.1.3.2.1 Except where otherwise specially provided for in these Regulations, goods of Class 1 shall not be transported together in freight containers, vehicles or wagons with dangerous goods of other classes.

7.1.3.2.2 Goods in Division 1.4, compatibility group S, may be transported together with dangerous goods of other classes.

7.1.3.2.3 Blasting explosives (except UN 0083 Explosive, blasting, type C) may be transported together with ammonium nitrate and inorganic nitrates of Class 5.1 (UN Nos. 1942 and 2067) provided the aggregate is treated as blasting explosives under Class 1 for the purposes of placarding, segregation, stowage and maximum permissible load.

7.1.3.2.4 Life-saving appliances (UN Nos. 3072 and 2990) containing Class 1 goods as equipment may be transported together with the same dangerous goods as contained in the appliances.

7.1.3.2.5 Air bag inflators, or air bag modules, or seat-belt pretensioners, of Division 1.4, compatibility group G, (UN 0503) may be transported with air bag inflators or air-bag modules or seat-belt pretensioners of Class 9 (UN 3268).".

Renumber 7.1.3.2 and subsequent paragraphs accordingly.

7.1.5 Insert a new section 7.1.5 to read as follows:

"**7.1.5 Special provisions applicable to the transport of substances stabilized by temperature control (other than self-reactive substances and organic peroxides)**

7.1.5.1 These provisions apply to the transport of substances:

(a) the proper shipping name of which contains the word "STABILIZED", and

(b) for which the SADT (see 7.1.4.3.1.3) as presented for transport in the package, IBC or tank is 50 °C or lower.

When chemical inhibition is not used to stabilize a reactive substance which may generate dangerous amounts of heat and gas, or vapour, under normal transport conditions, these substances need to be transported under temperature control. These provisions do not apply to substances which are stabilized by the addition of chemical inhibitors such that the SADT is greater than 50 °C.

***NOTE**: Some substances which are transported under temperature control are prohibited from transport by certain modes.*

7.1.5.2 The provisions in 7.1.4.3.1.1 to 7.1.4.3.1.3 and 7.1.4.3.2 apply to substances meeting criteria (a) and (b) in 7.1.5.1.

7.1.5.3 The actual transport temperature may be lower than the control temperature (see 7.1.4.3.1.1) but shall be selected so as to avoid dangerous separation of phases.

7.1.5.4 When these substances are transported in IBCs or portable tanks, the provisions for a SELF-REACTIVE LIQUID TYPE F, TEMPERATURE CONTROLLED shall apply. For transport in IBCs, see the special provisions in 4.1.7.2 and the "Additional requirements" in packing instruction IBC520; for transport in portable tanks, see the additional provisions in 4.2.1.13.

7.1.5.5 If a substance the proper shipping name of which contains the word "STABILIZED" and which is not normally required to be transported under temperature control is transported under conditions where the temperature may exceed 55 °C, it may require temperature control.".

Renumber subsequent paragraphs and sub-paragraphs accordingly.

Chapter 7.2

7.2.3.1.2 (a) (ii) For "within the vehicle", read "within the vehicle enclosure".

APPENDIX A and ALPHABETICAL INDEX

- Amend Appendix A and the alphabetical index in accordance with the amendments adopted for Chapter 3.2.

- Add the following entries in the alphabetical index:

"Battery, lithium, see	9	3090
	9	3091"
"1-CHLOROPROPANE	3	1278"

- Amend the following entries to read as follows:

"Hydrazine hydrate, see	8	2030"
"Propyl chloride, see	3	1278"